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ABSTRACT

Technological advances have brought about changes in office practices and procedures and in the skills and knowledge required of office workers. This report on the changing work environment of the office and the resulting implications for business education should be of interest to all those involved in the education, training, and retraining of office workers. This Illinois study surveyed (1) the present status of office education programs in high schools and community colleges, (2) the hardware and practices found in the offices, and (3) projections for future office education programs and curriculum development. (JS)

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CHANGING OCCUPATIONAL SKILLS AND REQUIREMENTS NEEDED BY OFFICE EMPLOYEES AND TECHNOLOGICAL DEVELOPMENTS IN OFFICE EQUIPMENT AND PROCEDURES AND IMPLICATIONS FOR OFFICE EDUCATION IN THE SEVENTIES

FINAL REPORT

Project No. 40 - A9

September 1, 1968 to September 1, 1969

Department of Vocational and Technical Education
College of Education
University of Illinois
Urbana, Illinois

in cooperation with

Research Coordinating Unit
Vocational and Technical Education Division
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PREFACE

It is anticipated that this study is the beginning in Illinois of a continuing dialogue with business and industry which office educators will continue in the future. The questionnaires developed as a part of this study provide a vehicle for collecting data for improving and updating school programs of office education. It is hoped that this report will provide an analysis and synthesis of present and future office techniques to enable curriculum directors, curriculum committees, classroom office educators, and their administrators at the secondary and community college levels to use similar data collection techniques on a local school level.

This study does not contain evidence regarding curriculum for youth and adults with special needs. The collection of data from the inner cities or urban communities were beyond the resources available for the study. Certainly the problems of these urban youth and adults must be considered in curriculum revision patterns--not only as the problem affects urban schools but also as similar problems are arising in less populous areas.

It is the desire of the investigator to express her sincere appreciation for having had the opportunity to pursue and finalize the enclosed study.

Anna Mahaffey

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CHAPTER I

THE PROBLEM

Preparation for office occupations has changed and is changing. With the elimination of many routine clerical jobs through increased automation, the businessman is demanding upgrading of the office worker. With the advent of federal funds, it is possible for an increasing number of schools to acquire more up-to-date equipment and have simulated, or model, office programs.

The student who does not choose to go to college and must join the working force must not be deprived of a marketable skill that can be derived from an office education class. With the prediction that the Gross National Product will double by the end of 1970, it is evident that there will be an increase in income, job opportunities, and a changing technological world. Most jobs will require a higher level of education for entry and for continued employment.

It is imperative that office workers possess a high level of judgment. They will need an understanding of the function of the office as an integral part of the complete business. The teacher must know what types of jobs are available and know what is going on in the modern office. Teachers must be able to adjust easily and be able to identify problems and use sound thinking in their solutions.

The area of office education is faced with many new problems and challenges today. According to present statistics 65 to 75 percent of the work population enter our labor force upon high school graduation. Thus, these people will need to be trained and retrained. A lot of this training will become the responsibility of the office education teacher in the high school and community college because our second largest working group in the United States is in the office occupational area.

Dr. Bruce I. Blackstone predicts that "Between 1966 and 1980 some 21 million new office-type jobs may be created with some 8.4 million available to teenagers."[1] There will be a big demand for stenographers, general clerks, typists (skilled and accurate) to take care of the flow of paper work in the medicare program, space program, communication field and the computer field, to name a few.

Statement of the Problem

To ascertain the occupational skills and requirements needed by office employees in order to prepare efficiently for employment due to technological developments in office equipment and changes in procedures in the office and to develop curriculum for teaching of office education and related teacher education program in the seventies.

Five objectives of the problem are to determine:

1. Occupational skills and requirements needed by office employees in order to prepare efficiently for employment due to technological developments in office equipment.
2. The technological changes that have recently occurred, are occurring, and are projected with respect to office equipment in the seventies.

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[1] Dr. Bruce I. Blackstone, "State of the Union in Office Education," FBE Bulletin, (March, 1968), p. 8.

3. The related changes in the nature of office procedures.
4. The implications of these changes in the development of curricula in secondary and post-secondary education in the field of office occupations in the seventies.
5. The related needs for revision of teacher preparation for the field of office occupations in the seventies.

Purpose of the Study

The purpose of the study is twofold: (1) to provide guidance for schools in education for office occupations in the secondary and post-secondary curricula, and (2) preparation of teachers for the field of office occupations.

To fulfill these purposes, data have been collected from the following sources:

1. The chairman and/or properly designated teacher of the business department of the randomly selected high schools in the state of Illinois excluding the city of Chicago.[1]*
2. The chairman and/or properly designated teacher of the business department of all Class I junior colleges in the state of Illinois excluding the city of Chicago.*

* Data were collected by mail and personal interview about the courses presently offered and whether plans were being made to offer the course by 1978; the equipment presently used for instructional purposes and whether plans were being

made to use the equipment by 1978; and, a summary of prediction of trends and developments in the office education curriculum by 1978.

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[1] The collection of data from the inner cities were beyond the resources available for the study.

3. The businesses, categorized as banking, insurance, and retail, were randomly selected in the towns where the randomly selected high schools were located.**
4. The government establishments were categorized into city clerks and county clerks; they were selected in the towns where the randomly selected high schools were located.**
5. Professional offices were categorized into accountants, architects, attorneys, and medical clinics; they were selected in the towns where randomly selected high schools were located.**

** Data were collected by mail and personal interview about the equipment presently used and whether they planned to acquire the equipment by 1978; whether school training is adequate; whether schools should train; whether they have an on-the-job training program; whether they employ a service bureau to perform bookkeeping functions; whether they employ a service bureau to perform duplicating functions; and, a summary of prediction of trends and developments in business as they may affect office employees by 1978.

Selection of Participants

The list of Illinois towns was taken from the area code listing in the Champaign-Urbana telephone directory. Population size for these towns was determined from the latest population census. Chicago and towns with a population of less than 5,000 were deleted from the list. The remaining towns were arranged according to their respective area code and population range. The towns were arranged according to the following population ranges: 5,000 to 15,000; 15,001 to 40,000; 40,001 to 70,000; and, 70,001 and above. By use of random numbers, twenty-five towns were selected for the study.

The next step was to select the high school to participate if there was more than one school in the town, and to select specific businesses within these towns. All Class I junior colleges in Illinois were included in the study, excluding the city of Chicago. The categories used were banking, insurance, retail, government, professional, manufacturing, and educational institutions. Questionnaires were sent to one business in each of these categories in each of the twenty-five towns except in the case of insurance companies and one type of governmental office which was that of the County Clerk. Insurance companies have many small offices and few centralized offices. It was decided to contact the central offices rather than the small sales offices. Two insurance companies were included in the study. Only six towns selected were the county seats; therefore, only six county clerks' offices were included in the study. Department stores were selected to represent retail businesses. Sixty-five manufacturers and/or their official representatives of office equipment and/or office supplies were contacted--sixty-four responded. Their comments and literature were used in the construction of the questionnaire and in formulating approaches and concepts used in the study. A copy of the school questionnaire and business questionnaire is given in Appendix A. The junior colleges added courses and equipment presently available in their schools and that which they plan to add by 1978, which were not listed on the questionnaire. That compilation of courses and equipment is presented in Appendix B.

Table 1 reports a summary of the total number of schools and businesses from which data were received and the total number contacted. The total number contacted was 261 and 213 responded which resulted in 81.60 percent participation. A detailed list of schools and businesses, by name and addresses, is given in Appendix C.

General Organization of the Study

This study analyzes the present and future status of secondary and community college programs in office education in Illinois, and the present and future status of office practices and hardware in businesses in Illinois. The study is organized into five chapters:

1. The Problem;
2. Present Status of Office Education in High Schools and Community Colleges in Illinois;
3. Present Status of Office Practices and Hardware in Businesses in Illinois;
4. Projections for Future Office Education Programs in Illinois; and
5. Projections for Curriculum Development in Office Education in the Seventies.

Chapter I has provided the problems in office education in Illinois with which educators and business are confronted for future planning and organizing of the curriculum.

TABLE 1

SUMMARY OF RESULTS FROM SELECTING PARTICIPANTS IN THE STUDY

Selected Participants	Total Number Contacted	Total Number Responding
High Schools	25	23
Junior Colleges	28	27
Banks	25	21
Department Stores	25	20
City Clerks	25	22
County Clerks	6	6
Insurance	2	2
Accountants	25	17
Architects	25	16
Attorneys (legal firms)	25	19
Medical Clinics	25	19
Manufacturing	25	21
Total	261	213

Percent of Total Contacted that Responded 81.60

Chapter II deals with the present status of office education in high schools and community colleges in Illinois. The courses "Presently Offered" and "Plan to Add by 1978" and the equipment "Presently Used" and "Plan to Acquire by 1978" are summarized with conclusions and recommendations.

In Chapter III the present office practices and hardware used in business in Illinois are analyzed and summarized with conclusions and recommendations.

Chapter IV is concerned with projections for future office education programs in Illinois as stated by participants in high schools, community colleges, businesses, and manufacturers of office equipment. Also, included in this chapter is a summary of occupational trends and implications for office education in the seventies.

Chapter V is the investigator's projections for curriculum development in office education in the seventies. The topics dealt with in these projections are: teachers; methods of instruction, scheduling, and facilities; instructional material and equipment; and standards and evaluation. Also, guidelines for curriculum development and implementation in the seventies are suggested.

CHAPTER II

PRESENT STATUS OF OFFICE EDUCATION IN HIGH SCHOOLS AND COMMUNITY COLLEGES IN ILLINOIS

Questionnaires were mailed to 25 high schools and 28 junior colleges. Data were collected by questionnaire from 23 high schools and 27 junior colleges. The findings are based on the 50 returns.

The first part of the questionnaire was concerned with the courses offered in both the high schools and junior colleges. Columns were provided for checking whether the courses were "Presently Offered," "Plan to Add by 1978," and "Expect to Discontinue by 1978." Also a category entitled "Other" was added at the end of the courses which provided an opportunity for each school to add courses that were given in their school but not included in the list. Courses that were offered in the schools and not included in the list are included in Appendix C.

Information was obtained from the questionnaires with regard to the following equipment "Presently Being Used" and "Plan to Add by 1978": typewriters, duplicating equipment, arithmetic machines, bookkeeping machines, machine shorthand, dictating equipment, other equipment, shorthand laboratories, and data processing equipment. A summary of office machines used for teaching purposes in the junior colleges listed under the category "Other" can be found in Appendix C. Each respondent was given an opportunity to summarize their prediction of trends and developments pertaining to the business education curriculum by 1978.

COURSES

Tables 2, 3, and 4 show the total number of schools presently offering each course, the total number of schools that plan to add the course by 1978, a summary of the total number of schools that plan to discontinue the course by 1978, and the total and percent of the total of each with respect to the total number of schools responding to the questionnaire.

Courses presently offered--One hundred percent of the schools offer one academic year of typewriting; 92 percent offer a third semester of typewriting. Ninety-six percent of the schools offer one year of shorthand with 94 percent offering the second year. One year of bookkeeping is offered in 84 percent of the schools. All other courses are offered in 20 to 78 percent of the schools.

Courses plan to add by 1978--The highest percentage of increase indicated is in the cooperative office occupations with a 28 percent indicating that they plan to add it to their programs. Twenty-four percent plan to add cooperative distributive education and introduction to data processing. Twenty-two percent or less plan to add one or more of the remaining courses in the listing.

Courses plan to discontinue by 1978--No school indicated that they plan to discontinue more than one course by 1978.

Conclusions--It is concluded from the data gathered and summarized from this part of the questionnaires that the courses offered will provide for work involving new technology, although this does not indicate whether much is being done. Introduction to data processing will be added in 24 percent of the schools bringing the total to 84

TABLE 2

TOTAL NUMBER OF SCHOOLS PRESENTLY OFFERING EACH COURSE

Types of Schools Surveyed	Number of Schools Responding	Typewriting, 1st Semester	Typewriting, 2nd Semester	Typewriting, 3rd Semester	Typewriting, 4th Semester	Personal Typewriting	Office Practice	Secretarial Practice	Bookkeeping I	Bookkeeping II	Business Law	Consumer Problems	Economics	Business English	Office Machines	Economic Geography	Business Arithmetic	General Business	Introduction to Data Processing	Computer Mathematics	Advertising	Retailing	Salesmanship	Shorthand I	Shorthand II	Cooperative Distributive Education	Cooperative Office Occupations
High School	23	23	23	21	16	17	19	13	22	12	16	10	7	8	12	3	10	18	5	0	2	8	10	22	21	14	14
Junior College	27	27	27	25	9	6	19	21	20	20	24	8	24	23	26	7	25	21	25	12	16	17	19	26	26	7	8
Total	50	50	50	46	25	23	38	34	42	32	40	18	31	31	38	10	35	39	30	12	18	25	29	48	47	21	22
Percent of Total		100	100	92	50	46	76	68	84	64	80	36	62	62	76	20	70	78	60	24	36	50	58	96	94	42	44

TABLE 3

TOTAL NUMBER OF SCHOOLS THAT PLAN TO ADD THE COURSE BY 1978

Types of Schools Surveyed	Number of Schools Responding	Typewriting, 1st Semester	Typewriting, 2nd Semester	Typewriting, 3rd Semester	Typewriting, 4th Semester	Personal Typewriting	Office Practice	Secretarial Practice	Bookkeeping I	Bookkeeping II	Business Law	Consumer Problems	Economics	Business English	Office Machines	Economic Geography	Business Arithmetic	General Business	Introduction to Data Processing	Computer Mathematics	Advertising	Retailing	Salesmanship	Shorthand I	Shorthand II	Cooperative Distributive Education	Cooperative Office Occupations
High School	23	0	0	0	2	1	0	4	0	3	2	7	3	4	2	1	0	2	10	6	3	4	1	0	0	2	3
Junior College	27	0	0	2	3	3	0	3	1	0	0	8	0	0	0	6	1	2	2	5	8	7	5	0	0	10	11
Total	50	0	0	2	5	4	0	7	1	3	2	15	3	4	2	7	1	4	12	11	11	11	6	0	0	12	14
Percent of Total		0	0	04	10	08	0	14	02	06	04	30	06	08	04	14	02	08	24	22	22	22	12	0	0	24	28

TABLE 4

TOTAL NUMBER OF SCHOOLS THAT PLAN TO DISCONTINUE THE COURSE BY 1978

Types of Schools Surveyed	Number of Schools Responding	Typewriting, 1st Semester	Typewriting, 2nd Semester	Typewriting, 3rd Semester	Typewriting, 4th Semester	Personal Typewriting	Office Practice	Secretarial Practice	Bookkeeping I	Bookkeeping II	Business Law	Consumer Problems	Economics	Business English	Office Machines	Economic Geography	Business Arithmetic	General Business	Introduction to Data Processing	Computer Mathematics	Advertising	Retailing	Salesmanship	Shorthand I	Shorthand II	Cooperative Distributive Education	Cooperative Office Occupations
High School	23	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0	0	1	0	1	0	0	0	0
Junior College	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	50	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0	0	1	0	1	0	0	0	0
Percent of Total		0	0	0	0	0	0	0	0	02	0	0	02	02	0	02	0	0	0	0	02	0	02	0	0	0	0

percent. As a result a significant number of schools will be offering training in data processing by 1978.

Recommendations--Careful consideration should be given to the inclusion of so many different courses; perhaps a combination of courses should be considered and thus eliminate the lengthy duration of courses such as two years of typewriting and shorthand. Much of the skill can be obtained in office practice and/or secretarial practice.

TYPEWRITERS AND TYPEWRITING EQUIPMENT

Tables 5 and 6 show the total and percent of total of each kind of typewriter and typewriting equipment that the schools are presently using and plan to acquire by 1978.

Typewriters and typewriting equipment presently using and/or plan to acquire by 1978--Two high schools have only electric typewriters. Ninety-six percent of the schools have electric typewriters and 74 percent have manuals. Nine junior colleges have no manual typewriters and only one plans to acquire manual typewriters by 1978. Sixty-two percent of the schools have Executive IBM typewriters and 14 percent are planning to acquire them by 1978. Presently, no school has an IBM MTST, however 32 percent plan to acquire one by 1978. When all other varieties of typewriters are counted, only 12 percent of the schools surveyed indicated they are using typewriters other than manual, electric, and Executive IBM; 88 percent indicated that they plan to acquire other varieties of typewriters by 1978.

TABLE 5

TYPEWRITERS AND TYPEWRITING EQUIPMENT PRESENTLY USED IN THE SCHOOLS

Types of Schools Surveyed	Number of Schools Responding	Manual	Electric	Executive IBM	Flexo-Writer	Vari-Typer	IBM MTST	Justo-writer	Auto-Typist	Other
High Schools	23	21	22	12	0	1	0	0	0	0
Junior Colleges	27	16	26	19	3	1	0	1	0	0
Total	50	37	48	31	3	2	0	1	0	0
Percent of Total		74	96	62	6	4	0	2	0	0

TABLE 6

TYPEWRITERS AND TYPEWRITING EQUIPMENT THAT THE SCHOOLS PLAN TO ACQUIRE BY 1978

Types of Schools Surveyed	Number of Schools Responding	Manual	Electric	Executive IBM	Flexo-Writer	Vari-Typer	IBM MTST	Justo-writer	Auto-Typist	Other
High Schools	23	0	0	4	2	2	4	1	1	0
Junior Colleges	27	1	1	3	6	6	12	3	7	0
Total	50	1	1	7	8	8	16	4	8	0
Percent of Total		2	2	14	16	16	32	8	16	0

Conclusions--Most schools are equipped with the essential typewriters and typewriting equipment. Little change is indicated in the acquisition of manual and electric typewriters. It appears that only the more common typewriters (manual, electric, and executive) are used for teaching purposes in the majority of the classrooms. More junior colleges than high schools indicate that they plan to acquire more special type typewriters (Flexowriter, Varityper, IBM MTST, Justowriter) by 1978.

Recommendations--Students should become acquainted with and aware of the functions of a variety of typewriters such as the Flexowriter, Varityper, IBM MTST, Justowriter, Autotypist, etc. It is recommended that surveys be conducted in the local community to determine which typewriters should be given prime consideration.

DUPLICATING EQUIPMENT

Tables 7 and 8 show the total and percent of total of each type of duplicating equipment that the schools are presently using and plan to acquire by 1978.

Duplicating equipment presently using and/or plan to acquire by 1978--Every high school participating in the study is using the spirit duplicating process and all except three of the junior colleges are using the spirit duplicating process. None of the junior colleges plan to acquire a duplicator by 1978. Only one high school is not using the mimeograph duplicating process and four junior colleges are not using the mimeograph duplicating process but one is planning to add it. Twenty percent of the schools are presently using the offset process and 28 percent are planning to add it. A copying

TABLE 7

DUPLICATING EQUIPMENT PRESENTLY USED IN THE SCHOOLS

Types of Schools Surveyed	Number of Schools Responding	Spirit Process	Mimeograph Process	Offset Process	Copier
High Schools	23	23	22	3	13
Junior Colleges	27	24	23	7	20
Total	50	47	45	10	33
Percent of Total		94	90	20	66

TABLE 8

DUPLICATING EQUIPMENT THAT THE SCHOOLS PLAN TO ACQUIRE BY 1978

Types of Schools Surveyed	Number of Schools Responding	Spirit Process	Mimeograph Process	Offset Process	Copier
High Schools	23	0	0	6	2
Junior Colleges	27	0	1	8	2
Total	50	0	1	14	4
Percent of Total		0	2	28	8

process is used by 66 percent of the schools and an additional 8 percent plan to add; therefore, 74 percent (approximately three-fourths of the schools) will be using a copying process by 1978.

Conclusions--A definite trend is toward the use of copying equipment; although the highest rate of increase in duplicating processes is the offset. The utilization of the spirit process and mimeograph process will remain highly constant.

Recommendations--Students should become aware of the advantages and disadvantages of each duplicating process. Fundamentals of each duplicating process should be taught because students need an acquaintance with the operational features.

OTHER EQUIPMENT

Tables 9 and 10 show the total and percent of total of each kind of "Other" equipment that the schools are presently using and plan to acquire by 1978. The category of "Other" includes the teletype, switchboard, addressing machine, and facsimile.

Conclusion--The results of the survey indicate that very little of this equipment is being utilized in the schools for teaching purposes.

Recommendations--Unless it can be justified on the basis of a local survey or predictions for the future, the equipment included in this category should not be a prime consideration for classroom use.

TABLE 9

OTHER EQUIPMENT PRESENTLY USED IN THE SCHOOLS

Types of Schools Surveyed	Number of Schools Responding	Teletype	Switchboard	Addressing Machine	Facsimile
High Schools	23	2	3	2	1
Junior Colleges	27	0	1	0	2
Total	50	2	4	2	3
Percent of Total		4	8	4	6

TABLE 10

OTHER EQUIPMENT THAT THE SCHOOLS PLAN TO ACQUIRE BY 1978

Types of Schools Surveyed	Number of Schools Responding	Teletype	Switchboard	Addressing Machine	Facsimile
High Schools	23	0	2	4	0
Junior Colleges	27	3	4	4	2
Total	50	3	6	8	2
Percent of Total		6	12	16	4

ADDING MACHINES, CALCULATORS, AND BOOKKEEPING MACHINES

Tables 11 and 12 show the total and percent of total of each kind of adding machine, calculator, and bookkeeping machine that the schools are presently using and plan to acquire by 1978.

Adding machines, calculators, and bookkeeping machines presently using and/or plan to acquire by 1978--Printing electric calculators, rotary electric calculators, full keyboard electric adding machines, and ten-key electric adding machines are the most commonly used machines in the schools included in the survey. No more than two or three schools indicated that they plan to acquire many more additional machines by 1978. Eighteen percent of the schools indicated that they plan to acquire bookkeeping machines by 1978. This was the largest expected acquisition among all machines listed.

Conclusion--In order for students to have maximum transfer from the classroom to the job they should be given an opportunity to practice on several different machines. Emphasis should be placed on most commonly used machines in the local area as determined by a local survey.

Recommendations--When equipping or replacing adding machines, calculators, and bookkeeping machines in the classroom, first consideration should be given to the lease or purchase of electronic calculators. With the increasing use of data processing equipment, it appears that less consideration should be given to the acquisition of bookkeeping machines.

TABLE 11

ADDING MACHINES, CALCULATORS, AND BOOKKEEPING MACHINES PRESENTLY USED IN THE SCHOOLS

		Adding Machines				Calculators						
Types of Schools Surveyed	Number of Schools Responding	Ten-key Electric	Ten-key Manual	Full Keyboard Electric	Full Keyboard Manual	Key Driven Electric	Key Driven Manual	Printing Electric	Printing Manual	Rotary Electric	Rotary Manual	Book-keeping Machines
High Schools	23	21	8	18	6	14	16	19	2	19	8	5
Junior Colleges	27	16	5	21	5	16	6	25	3	24	3	12
Total	50	37	13	39	11	30	22	44	5	43	11	17
Percent of Total		74	26	78	22	60	44	88	10	86	22	34

TABLE 12

ADDING MACHINES, CALCULATORS, AND BOOKKEEPING MACHINES THAT THE SCHOOLS PLAN TO ACQUIRE BY 1978

		Adding Machines				Calculators						
Types of Schools Surveyed	Number of Schools Responding	Ten-key Electric	Ten-key Manual	Full Keyboard Electric	Full Keyboard Manual	Key Driven Electric	Key Driven Manual	Printing Electric	Printing Manual	Rotary Electric	Rotary Manual	Book-keeping Machines
High Schools	23	1	0	1	0	0	0	2	0	0	0	5
Junior Colleges	27	0	0	1	0	0	2	1	0	2	0	4
Total	50	1	0	2	0	0	2	3	0	2	0	9
Percent of Total		2	0	4	0	0	4	6	0	4	0	18

DICTATING EQUIPMENT AND MACHINE SHORTHAND

Tables 13 and 14 show the total and percent of total of each type of dictating equipment "Presently Used" in the schools and "Plan to Acquire by 1978." Also included is the total and percent of total of the schools teaching machine shorthand and "Expect to Add" machine shorthand by 1978.

Dictating equipment and machine shorthand--Presently, the tape recorder which is used by 66 percent of the schools participating in the study is the most commonly used dictating equipment included in the survey. Only 8 percent plan to add tape recorders by 1978. Slightly more than half of the schools are using magnetic belt and plastic belt equipment. Only 2 percent plan to add either type of equipment by 1978. Approximately one-third of the schools are using magnetic tape equipment. Only 12 percent plan to add magnetic tape equipment by 1978. Thus less than 50 percent of the schools participating in the survey will be using magnetic tape equipment by 1978. Machine shorthand is taught in 20 percent of the schools. Twenty-four percent plan to add machine shorthand by 1978. The utilization of magnetic disc equipment ranks the lowest--10 percent. Only 2 percent plan to add the equipment by 1978.

Conclusion--The utilization of tape recorders, magnetic belt and plastic belt equipment is going to remain about the same. The use of magnetic tape equipment will increase slightly. A little more than two times as many schools will be teaching machine shorthand in 1978 than are presently offering it.

TABLE 13

DICTATING EQUIPMENT PRESENTLY USED IN THE SCHOOLS

Types of Schools Surveyed	Number of Schools Responding	Magnetic Belt	Magnetic Disc	Magnetic Tape	Plastic Belt	Tape Recorder	Machine Shorthand
High Schools	23	10	1	8	13	16	4
Junior Colleges	27	17	4	10	13	17	6
Total	50	27	5	18	26	33	10
Percent of Total		54	10	36	52	66	20

TABLE 14

DICTATING EQUIPMENT THAT THE SCHOOLS PLAN TO ACQUIRE BY 1978

Types of Schools Surveyed	Number of Schools Responding	Magnetic Belt	Magnetic Disc	Magnetic Tape	Plastic Belt	Tape Recorder	Machine Shorthand
High Schools	23	0	0	2	0	1	4
Junior Colleges	27	1	1	4	1	3	8
Total	50	1	1	6	1	4	12
Percent of Total		2	2	12	2	8	24

Recommendations--With the ever increasing demand for more office efficiency and economy of both time and money more consideration should be given to the utilization of dictating equipment. Extensive classroom use should be left to the judgment of the teacher.

SHORTHAND LABORATORIES

The data collected from those schools participating in the survey regarding the present and future utilization of shorthand laboratories are presented in Tables 15 and 16.

Shorthand laboratories--Over half of the schools are presently using phonographs, however, only 6 percent indicated that they plan to acquire phonographs by 1978 to be used for shorthand instructional purposes. Forty percent of the schools indicated that they are presently using multiple-tape consoles with listening stations and tape recorders. Twenty-six percent indicated that they plan to acquire multiple-tape consoles with listening stations by 1978; only 6 percent indicated that they plan to add tape recorders with listening stations by 1978. Less than one-fourth of the schools indicated that they are presently using wireless battery powered equipment and 4 percent indicated that they plan to add the equipment by 1978.

Conclusions--Shorthand laboratories are not extensively used and the future use tends to be toward the multiple-tape consoles with listening stations.

Recommendations--The proper use of shorthand laboratories can facilitate the learning of shorthand if the teacher utilizes the equipment properly. The teacher must know her role in the utilization

TABLE 15

SHORTHAND LABORATORIES PRESENTLY USED IN SCHOOLS

Types of Schools Surveyed	Number of Schools Responding	Multiple-tape console with listening stations	Tape recorders with listening stations	Phonographs	Wireless Battery Powered
High Schools	23	7	7	16	5
Junior Colleges	27	13	13	13	5
Total	50	20	20	29	10
Percent of Total		40	40	58	20

TABLE 16

SHORTHAND LABORATORIES THE SCHOOLS PLAN TO ACQUIRE BY 1978

Types of Schools Surveyed	Number of Schools Responding	Multiple-tape console with listening stations	Tape recorders with listening stations	Phonographs	Wireless Battery Powered
High Schools	23	6	3	0	2
Junior Colleges	27	7	0	3	0
Total	50	13	3	3	2
Percent of Total		26	6	6	4

of the equipment, understand the role of the student, and know the teaching techniques involved in using the equipment as a teaching aid.

DATA PROCESSING EQUIPMENT

Information acquired regarding the present and future use of data processing equipment in the schools for teaching purposes is presented in Tables 17 and 18.

Data processing equipment--More junior colleges are presently providing instruction on data processing equipment than high schools; consequently, more high schools plan to acquire equipment and provide instruction. More schools are offering instruction on the key punch than any other type of equipment listed in the survey and 24 percent of the schools plan to add it by 1978. The scanner is less frequently used, but the highest percent of additions to data processing instruction and equipment is the scanner. More than one-third of the schools are presently providing instruction in the utilization of the sorter, collator, interpreter, verifier, computer, and reproducer. Less than 25 percent of the schools plan to add the equipment for instructional purposes by 1978.

Conclusions--Instruction in the utilization of data processing equipment will continue to be on the increase but at not too fast a pace due to training of teachers and to expensive equipment with proper storage space and conditions conducive to proper machine functioning.

Recommendations--More schools should be giving instruction in the applications of data processing as well as actual experience.

TABLE 17

DATA PROCESSING EQUIPMENT PRESENTLY USED IN THE SCHOOLS

Types of Schools Surveyed	Number of Schools Responding	Key Punch	Sorter	Collator	Interpreter	Verifier	Accounting Machine	Computer	Reproducer	Scanner
High Schools	23	7	4	1	1	2	2	1	1	0
Junior Colleges	27	22	19	19	19	19	13	17	16	5
Total	50	29	23	20	20	21	15	18	17	5
Percent of Total		58	46	40	40	42	30	36	34	10

TABLE 18

DATA PROCESSING EQUIPMENT THE SCHOOLS PLAN TO ACQUIRE BY 1978

Types of Schools Surveyed	Number of Schools Responding	Key Punch	Sorter	Collator	Interpreter	Verifier	Accounting Machine	Computer	Reproducer	Scanner
High Schools	23	7	7	8	7	5	6	6	4	5
Junior Colleges	27	5	3	3	3	3	5	5	4	9
Total	50	12	10	11	10	8	11	11	8	14
Percent of Total		24	20	22	20	16	22	22	16	28

It may not always be necessary for the business teacher to be the instructor, perhaps it could be a math teacher. Also equipment for the sole use of the business department is not necessary. Equipment used by administrative offices in the schools may be used with a planned schedule of events on the part of all involved.

KEYPUNCH SIMULATORS

Data collected regarding keypunch simulators are summarized in Tables 19 and 20.

Keypunch simulators--These data reveal that the only significantly used keypunch simulator is the IBM Selectric, however, the increase in its acquisition is very small.

Conclusion--The IBM Selectric, with its special features and elements, does not properly train students in the use for which it was intended; rather it provides an extra typewriter.

Recommendations--Careful selection of a simulator is very important and should be carefully planned for before purchase.

TABLE 19

KEYPUNCH SIMULATORS PRESENTLY USED IN THE SCHOOLS

Types of Schools Surveyed	Number of Schools Responding	IBM Selectric	Royal Training Tandem	Smith-Corona 250 KPT	Electric Portable Card Punch	Manual Portable Card Punch
High Schools	23	14	1	0	0	0
Junior Colleges	27	12	2	0	1	1
Total	50	26	3	0	1	1
Percent of Total		52	6	0	2	2

TABLE 20

KEYPUNCH SIMULATORS THAT THE SCHOOLS PLAN TO ACQUIRE BY 1978

Types of Schools Surveyed	Number of Schools Responding	IBM Selectric	Royal Training Tandem	Smith-Corona 250 KPT	Electric Portable Card Punch	Manual Portable Card Punch
High Schools	23	3	1	0	1	0
Junior Colleges	27	1	1	0	0	0
Total	50	4	2	0	1	0
Percent of Total		8	4	0	2	0

CHAPTER III

PRESENT STATUS OF OFFICE PRACTICES AND HARDWARE IN BUSINESSES IN ILLINOIS

Two hundred eight questionnaires were mailed to various business firms in the state of Illinois. These firms were selected at random from listings provided by the Chamber of Commerce in cities in which the schools were located that were selected from a listing of the towns as described in Chapter I. Data were collected from 163 of the 208 firms contacted, for a return of 78 percent. The findings are based on these 163 returns.

The equipment was categorized in the business questionnaire to coincide with the school questionnaire. The equipment categories were as follows: typewriters, duplicating equipment, other, adding machines, calculators, bookkeeping machines, dictation equipment, machine shorthand, and data processing equipment. Questions were asked about on-the-job training, utilization of service bureaus, and trends and developments in business as they may affect office employees by 1978.

The first part of the questionnaire dealt with the equipment now rented or owned by the business. Table 21 shows the total of each kind of typewriter used in the offices of the businesses and the percent of the total of each kind with respect to the total number of firms responding to the questionnaire.

Typewriters and typewriting equipment presently used in the businesses--More of the businesses in this survey used electric typewriters than manual. A little over one-third of the businesses

TABLE 21

TYPEWRITERS AND TYPEWRITING EQUIPMENT PRESENTLY USED IN THE BUSINESSES

Types of Businesses Surveyed	Number of Firms Responding	Manual	Electric	Executive IBM	Flexo-Writer	Vari-Typer	IBM MTST	Justo-writer	Auto-Typist	Other
Banks	21	19	18	10	0	0	0	0	1	0
Department Stores	20	18	13	3	0	2	0	0	0	0
City	22	22	18	5	0	1	0	0	0	0
County	6	6	5	3	0	0	0	0	0	0
Insurance	2	2	2	2	0	2	1	0	0	0
Accountants	17	4	10	8	0	0	0	0	0	1
Architects	16	4	11	6	1	1	0	0	0	1
Legal	19	7	12	8	0	0	0	0	0	0
Medical Clinics	19	13	17	6	0	0	0	0	0	0
Manufacturing	21	15	19	11	6	8	5	0	2	2
Total	163	110	125	62	7	14	6	0	3	4
Percent of Total		68	77	38	4	9	4	0	2	2

in the survey had proportional spacing typewriters. When all other varieties of machines with alphabetic keyboards (with the exception of key punch machines) were counted, only twenty-one percent of the businesses surveyed identified machines in this category.

Conclusions--Students should be given an opportunity to perform on the type of equipment that they will find in the office for maximum positive transfer of their skill.

Recommendations--When equipping or replacing typewriters in the classroom, first consideration should be given to the lease or purchase of electric typewriters. Unless it can be justified on the basis of a local survey or predictions for the future, the lease or purchase of specialty typewriters (e.g. automatic typewriters) should not be a prime consideration for classroom use. A possible exception would be the proportional spacing typewriter which was found in 38 percent of the businesses surveyed.

DUPLICATING EQUIPMENT

The second category of equipment that was dealth with in the first part of the questionnaire was duplicating equipment. Table 22 shows the total and percent of the total of each type of duplicating equipment presently owned or rented and used in the offices of the businesses participating in the study.

Duplicating equipment presently used in businesses--More of the businesses (73%) used some type of copier than any other type of duplicating machine. Approximately one-fourth of the businesses included in the study used the spirit, mimeograph, and offset process.

TABLE 22

DUPLICATING EQUIPMENT PRESENTLY USED IN THE BUSINESSES

Types of Businesses Surveyed	Number of Firms Responding	Spirit Process	Mimeograph Process	Offset Process	Copier
Banks	21	6	7	2	17
Department Stores	20	2	5	1	8
City	22	5	8	3	19
County	6	2	2	0	6
Insurance	2	1	1	2	2
Accountants	17	1	4	6	10
Architects	16	5	3	5	10
Legal	19	1	2	2	11
Medical Clinics	19	3	6	2	15
Manufacturing	21	12	7	12	19
Total	163	38	45	35	117
Percent of Total		23	28	21	72

Conclusion--It has been predicted by many educators that copying machines will replace many of the other methods of duplicating. This is evidenced by the results of this study.

Recommendations--A unit of instruction in vocational office preparation classes should be included regarding copying machines and processes. This unit of instruction should include resource information that will assist the student in keeping abreast of changes and production of new equipment. The unit of instruction should include the advantages, disadvantages, and special uses for each method of copying.

OTHER EQUIPMENT

The third category of equipment that was dealt with in the first part of the questionnaire was "Other." The equipment included in this category is listed in Table 23. The total of each kind of "Other" equipment used in the offices of the businesses and the percent of the total of each kind with respect to the total number of firms responding to the questionnaire is given in the table.

Other equipment presently used in the businesses--More of the businesses in this survey used the switchboard; however, it was used by less than one-half of the participants included in the study. When the remaining varieties of this category (teletype, addressing machine, and facsimile) were counted, approximately fifty percent of the businesses identified machines in this category.

Conclusion--Students should be given an opportunity to operate a switchboard and become familiar with PBX systems that are most commonly used by business firms. Actual performance in the operation is most desirable.

TABLE 23

OTHER EQUIPMENT PRESENTLY USED IN THE BUSINESSES

Types of Businesses Surveyed	Number of Firms Responding	Teletype	Switchboard	Addressing Machine	Facsimile
Banks	21	1	15	17	3
Department Stores	20	5	8	2	0
City	22	4	10	9	0
County	6	0	1	3	1
Insurance	2	1	2	1	0
Accountants	17	2	2	2	0
Architects	16	0	2	1	0
Legal	19	0	0	1	0
Medical Clinics	19	0	12	2	1
Manufacturing	21	16	16	11	1
Total	163	29	68	49	6
Percent of Total		18	42	30	4

Recommendations--Students can learn about the newer types of switchboards and interoffice directors through a visit to the local office of the telephone company. There seems to be some question as to the desirability of training students on a school switchboard. Although a company will usually train their employees to use their specific type of switchboard, it is a distinct advantage when applying for an office position to be able to operate a switchboard or to have had some experience in its utilization.

ADDING MACHINES, CALCULATORS, AND BOOKKEEPING MACHINES

The fourth category of equipment dealt with in the first part of the questionnaire was adding machines, calculators, and bookkeeping machines. The types of adding machines, calculators, and bookkeeping machines included in the study are listed in Table 24.

Adding machines, calculators, and bookkeeping machines presently used in businesses--Seventy-five percent of the businesses in this survey used ten-key electric adding machines and forty-seven percent used full keyboard electric machines. When the other two types of adding machines were counted, only 34 percent of the businesses surveyed indicated they were using them. More of the businesses in this survey were using key driven electric calculators (forty-two percent) than any other type of calculator. Thirty-five percent of the businesses were using electric printing calculators, and a total of 33 percent of the businesses were using key driven manual calculators, printing manual calculators, rotary electric calculators, and rotary manual calculators. Only twenty-seven percent were using bookkeeping machines.

TABLE 24

ADDING MACHINES, CALCULATORS, AND BOOKKEEPING MACHINES PRESENTLY USED IN THE BUSINESSES

		Adding Machines				Calculators						
Types of Businesses Surveyed	Number of Firms Responding	Ten-key Electric	Ten-key Manual	Full Keyboard Electric	Full Keyboard Manual	Key Driven Electric	Key Driven Manual	Printing Electric	Printing Manual	Rotary Electric	Rotary Manual	Book-keeping Machines
Banks	21	17	3	18	4	17	0	8	0	4	0	13
Department Stores	20	15	8	5	2	10	1	4	0	2	2	2
City	22	19	2	10	2	10	0	5	1	5	0	10
County	6	5	0	4	3	4	0	1	0	0	0	1
Insurance	2	2	0	1	0	2	0	2	0	1	0	1
Accountants	17	16	3	2	0	5	1	7	0	6	0	1
Architects	16	5	1	7	1	3	2	7	0	2	0	0
Legal	19	13	5	6	4	1	0	2	0	1	1	0
Medical Clinics	19	11	2	10	5	2	1	6	0	1	0	10
Manufacturing	21	19	5	13	5	14	7	14	2	11	3	5
Total	163	122	29	76	26	68	12	56	3	33	6	43
Percent of Total		75	18	47	16	42	7	34	2	20	4	26

Conclusion--From the data presented in Table 24, it can be concluded that the ten-key adding machine is the most frequently used arithmetic machine included in the survey.

Recommendations--When equipping or replacing arithmetic machines in the classroom, first consideration should be given to lease or purchase of electric ten-key machines. Consideration should be given to lease or purchase of electric key driven calculators and electric printing calculators. Unless it can be justified on the basis of a local survey or predictions for the future, the lease or purchase of other types of arithmetic and bookkeeping machines included in the survey should not be given prime consideration for classroom use.

DICTATING EQUIPMENT

The fifth category of equipment dealt with in the first part of the questionnaire was dictating equipment used in the offices of the businesses included in the study. Table 25 shows the total of each type of dictating equipment and the percent of the total of each type with respect to the total number of firms responding to the questionnaire.

Dictating equipment presently used in businesses--The tape recorder was used more than any other type of dictating equipment and it was used in only thirty percent of the businesses. The magnetic belt was used in twenty-four percent of the businesses. All other types of dictating equipment (magnetic disc, magnetic tape, plastic belt, and machine shorthand) combined were used by a little over one-third of the businesses in the survey.

TABLE 25

DICTATING EQUIPMENT PRESENTLY USED IN THE BUSINESSES

Types of Businesses Surveyed	Number of Firms Responding	Magnetic Belt	Magnetic Disc	Magnetic Tape	Plastic Belt	Tape Recorder	Machine Shorthand
Banks	21	4	0	1	0	4	0
Department Stores	20	0	0	0	1	2	0
City	22	3	3	4	2	8	1
County	6	0	0	1	0	0	0
Insurance	2	1	0	1	1	1	0
Accountants	17	5	0	1	1	1	0
Architects	16	2	1	5	1	7	0
Legal	19	2	2	4	2	5	0
Medical Clinics	19	6	4	2	7	11	0
Manufacturing	21	15	3	8	5	10	0
Total	163	38	13	27	20	49	1
Percent of Total		23	8	17	12	30	6

Conclusion--From the data computed in Table 25, it can be seen that, in general, the 163 businesses participating in the study do not use dictating equipment to a large extent. It appears that there is a definite need for training and the acquisition of knowledge with respect to dictating equipment, as well as becoming more proficient in shorthand.

Recommendations--A unit of instruction in the utilization of dictating equipment should be included in office practice and office machines courses. Students should be given the opportunity to use more than one type of dictation equipment. The unit of instruction should include the advantages and disadvantages of each type of dictation equipment.

DATA PROCESSING EQUIPMENT

Data processing equipment was the last category of equipment dealt with in the questionnaire sent to the selected businesses included in the study. Table 26 shows the total of each type of data processing equipment and the percent of the total of each type with respect to the total number of firms responding to the questionnaire.

Data processing equipment presently used in businesses--Manufacturers used more data processing equipment than any other business category included in the study. The sorter was used in nineteen percent of the businesses, the key punch was used in 18 percent of the businesses, and the computer was used in 16 percent of the businesses. All other data processing equipment was used in 15 percent or less of the businesses.

TABLE 26

DATA PROCESSING EQUIPMENT PRESENTLY USED IN THE BUSINESSES

Types of Businesses Surveyed	Number of Firms Responding	Key Punch	Sorter	Collator	Interpreter	Verifier	Accounting Machine	Computer	Reproducer	Scanner
Banks	21	1	3	0	1	3	3	3	0	0
Department Stores	20	2	1	1	1	1	0	1	1	0
City	22	4	5	5	1	4	4	4	3	0
County	6	1	1	0	0	0	0	1	0	0
Insurance	2	2	2	2	2	2	1	2	1	1
Accountants	17	3	3	3	1	1	4	1	2	0
Architects	16	1	2	1	0	0	1	2	1	0
Legal	19	0	0	0	0	0	0	0	0	0
Medical Clinics	19	3	3	2	1	1	4	2	0	0
Manufacturing	21	12	11	11	11	12	5	10	10	6
Total	163	29	31	25	18	24	22	26	18	7
Percent of Total		18	19	15	11	15	13	16	11	4

Conclusion--The data in Table 26 indicate that, in general, a very small percentage of the 163 businesses participating in the study use data processing equipment. It seems appropriate to conclude that businesses are not using data processing equipment because of the lack of well trained personnel.

Recommendations--If there is a need for adequately trained personnel in the operation and utilization of data processing equipment, schools should provide some training. Further investigation is necessary before a more definite recommendation may be made.

ON-THE-JOB TRAINING AND UTILIZATION OF SERVICE BUREAUS

The last part of the questionnaire dealt with on-the-job training and the utilization of service bureaus. Table 27 shows the total of each category of business that has on-the-job training and the total of each category of business that uses a service bureau for their bookkeeping and duplicating. In addition, a total of all businesses responding "Yes" and the percent of each total is given.

On-the-job training programs and use of service bureaus--More of the businesses in this survey provided on-the-job training than used service bureaus for bookkeeping and duplicating. Fifty-four percent of the cooperating businesses provided on-the-job training. Less than one-fourth of the cooperating businesses used service bureaus for bookkeeping and duplicating. As will be noted banks rank highest with on-the-job training (81 percent). They also rank highest in utilization of service bureaus for bookkeeping and duplicating (48 and 14 percent respectively).

TABLE 27

ON-THE-JOB TRAINING PROGRAMS AND USE OF SERVICE BUREAUS FOR BOOKKEEPING AND DUPLICATING AS STATED BY THE BUSINESSES PARTICIPATING IN THE STUDY

Type of Business	Total Number Participating	On-The-Job Training		Service Bureau Bookkeeping		Service Bureau Duplicating	
		Total Responding "Yes"	Percent of Total Responding "Yes"	Total Responding "Yes"	Percent of Total Responding "Yes"	Total Responding "Yes"	Percent of Total Responding "Yes"
Banks	21	17	80.9	10	47.6	3	14.3
Department Stores	20	15	75.	2	10.	2	10.
City Clerks	22	5	22.7	1	4.5	0	0
County Clerks	6	3	50.	0	0	0	0
Insurance	2	1	50.	0	0	0	0
Accountants	17	10	58.8	4	23.5	2	11.8
Architects	16	7	43.8	1	6.3	2	12.5
Legal Firms	19	5	26.3	1	5.3	1	5.3
Medical Clinics	19	14	73.7	5	26.3	1	5.3
Manufacturing	21	11	52.4	0	0	1	4.8
Total	163	88		24		12	
Percent of Total		54		15		7	

Conclusions and Recommendations--It may be concluded that a high degree of specialty training is not necessary for many businesses because in seven of the ten categories listed fifty percent or more offer on-the-job training. The low utilization of data processing equipment by banks may be attributed to their relatively high utilization of bookkeeping service bureaus.

CHAPTER IV

PROJECTIONS FOR FUTURE OFFICE EDUCATION PROGRAMS IN ILLINOIS

Projection of Trends and Developments in the Office Education Curriculum in the High Schools by 1978, as Stated by High School Teachers Participating in the Study

The office education curriculum of the future will have to be broad, based on the fact that we cannot train for an initial job, but that we must develop an attitude of retraining and continuing education. Methods of teaching will change and we will see much more use of closed circuit television and programmed material in the teaching of large classes in such subject areas as typewriting and shorthand. The talking typewriter has great potential for the teaching of spelling, typewriting, and for dictation.

There will be more team teaching within departments, as well as between departments. The curriculum will have to be more intensely geared to specialization with each student being trained according to his interests and abilities.

Much must be done curriculum-wise for the lower ability student. We are not training this student to take his place in the world of work. More will be done in the area of automation at the high school level. In the future the larger high schools will do much more to train students at a competency level in the use of the tools of automation. We will also stress the necessity of general education. The beginning workers must be better informed along broad lines. They must have a basis for economic understanding, along with a vocabulary for business.

Both accuracy and speed in shorthand and typewriting will be increased. With increased use of types, etc., errors in typewriting will be even more costly. Machine shorthand will become even more popular at the high school level. This inclusion of machine shorthand does not necessarily mean that the demand for manual shorthand will decrease. Both will play an integral part in the curriculum.

The use of more business machines in the high school curriculum will increase. Beginning typewriting will move down into the junior high school to allow time, teachers, and space for additional opportunities. The senior high schools will expand advanced course offerings and more schools will offer cooperative office and distributive programs. Repairing and maintaining machines will become an increasingly important part of education, as qualified repairmen will be in short supply.

Improved copiers will replace spirit duplicators; the mimeograph will be replaced by offset printing or copiers; electronic calculators will replace present day types; bookkeeping will be revised to match data processing methods of reporting information; and microfilm will replace the older type of filing.

With the change in teaching methods and skill development, there should be some implementation for the teaching of attitudes and concepts of business. Businessmen feel that young people entering the world of work need to develop a better attitude toward giving a "day's work for a day's pay."

Projection of Trends and Developments in the Office Education Curriculum in the Junior Colleges by 1978, as Stated by Junior College Teachers Participating in the Study

There will be an increased emphasis on the understanding of the world of citizenship--economics, political science, international politics, language for travelers and workers in that area, competence in selling, marketing, accounting, clerical, secretarial, and management. Supporting courses will be offered in human relations including courses in business etiquette, business and personal psychology, and human values.

The concept of computer programmer will be drastically different from what it is today. The computer user will fill out forms with information concerning a problem. The forms will be read by optical scanning equipment and the computer will write or call the program required to solve the problem. The computer program will no longer code programs. He will develop, compile software and operating system packages. He will not have to search volumes of manuals for information but input keywords to the computer will give him the appropriate information. As time progresses fewer and fewer computer programmers will be required. More knowledge, training, and experience will be required to fill programmer positions.

Many operators, maintenance technicians, and public relations personnel will be required to maintain and advance the image and equipment of computer software and hardware companies. All offices will have remote terminals tied into computers to solve problems. Hosewives will interrogate grocery store inventories from home terminals for immediate purchase, billing, and shipment. Clerical tasks will vastly diminish and computer software and hardware design will be so complex that the doors to a high level technical position in data processing will be open to a select few individuals who have the ability to solve problems that other computers have not yet solved.

The community college data processing curriculum must alter its objectives and instructional approaches accordingly. More qualified students will enter data processing; thus many skills now taught in the college will be taught in the high school. Data processing students will come to the college with an understanding of computer and data processing concepts.

The business education curriculum in 1978 will reflect planning and activities necessary to enable students to function effectively in decision-making and administrative positions. Classes will need to make use of simulated activities and situations when on-the-job experience is neither available or practical.

Students will need a high level of skill development, combined with the knowledge and experience to make decisions that are effective in the operation of the business. They will need to adapt their skills to make the best use of equipment so that they can perform creatively.

Accounting, data processing and systems development will be a major item in the business curriculum and a requirement in most business programs. The secretarial and clerical curriculum will require more general knowledge courses, both in business and other areas. Operation of special machines and equipment will be a cooperative venture between schools, business, and manufacturers. There will be much more emphasis on on-the-job training coupled with a few hours each day of class work.

More knowledge in the areas of science, social studies and human relations will be needed. The ability to understand and learn skills in specialized electronic equipment and data processing machines will be a must. Communications skills must be upgraded.

Manual typewriters will be obsolete. The electric typewriters that we know today will be considered in the same place as manual typewriters are today. The skills will still be essential as they are today, but these will change and emphasis will be on entirely different machines than are known today. The vast amount of work will be done by the computer. Machine shorthand will be the thing for the secretary because of ease and speed. Input to the computer will in many cases use machine shorthand as the media, or more advanced methods than are used today. All calculators will be of the electronic nature. All these will force business educators to up-date and up-grade methods of teaching. Getting more done in less time will be of prime importance. Retraining of adults will become an important part of the educational picture.

What we actually do will depend on what happens in the business world. As the percentage of the labor force employed in some type of business occupation increases, the importance of business education must also increase. By 1978, a larger number and percentage of students will be attending college. Thus, it is believed that high schools will have less advanced vocational courses--that such courses will be the responsibility of junior colleges.

High school students will begin college credit work while completing high school. Students will be taking less time to accomplish skills in typewriting and shorthand. Four semesters of shorthand and four semesters of typewriting will be out.

There will be more cooperation and better articulation between senior colleges and universities and the junior colleges.

Projection of Trends and Developments in Business as They May Affect Office Employees by 1978, as Stated by Businesses Participating in the Study

Banks

In banks there will be fewer job openings and higher educational standards. More of the office operation will be handled by computers. Employees have become too costly in many of the more routine jobs which can be handled by computers on premise service bureaus.

Department Stores

*Excerpts from talk given by Lloyd L. Ringler, Illinois Business Education Association, Springfield, Illinois, November, 1968.

> "Very possibly, and very probably the thing that could have the most dramatic effect of all on retailing through the 1970's is electronic data processing. Today there are some 300 computer systems installed in retail organizations with an equal number on order. Small stores will find ways to participate in EDP pools. The fourth generation computers now being produced will be used to keep tab on inventories and sales, to help determine locations for new stores, design retail warehouses for maximum efficiency, schedule work loads and personnel assignments, draw market or customer profiles, coordinate integration of inventory

management through vendor marking; provide centralized control of credit systems, reduce the processing of credit applications from weeks to a matter of minutes, and provide automatic verification of credit cards at point of sale. In short, many of the innovations in retail operations for the future will be based on computer technology. The personnel requirements of retail organizations for the future, in addition to including EDP technicians will be changed in other ways, too. There will be greater flexibility in the use of both sales and sales supporting personnel, who will be shifted more frequently as work loads change.

"Mail, telephone and in home selling will undoubtedly account for an increasing percentage of total sales in the 70's. The hardware already developed to link the consumer to the store far outstrips its usage. The dial phone is replacing the U.S. mails as the most common vehicle for telepurchasing. Tomorrow, touch phones and picture phones plus closed circuit TV will make buying from the home easier and, paradoxically, more personal. The men who talk seriously about telepurchasing are not mere yarn spinners about some distant fantastic future. They say that some time in the 70's housewives will be able to order practically all groceries, household goods, personal care items, drugs and other staple items from a few large central distribution facilities in each major metropolitan area. Consumers will never set foot inside these centers except possibly for guest tours. Instead, retail transactions will be made by electronic telecommunications and push button devices installed in private homes and hooked on line to data processing networks. A variation of this but very similar is the phono vision, a device in each home that enables the housewife to view the items she is considering for ordering. After she makes her selection she slips her charge plate into the base of the phono vision and this completes the transaction including the charge."

Office employees need to know modern technology and terminology.

City Clerks

Office procedures are becoming and will continue to be more automated. Computers will replace many bookkeeping machines. Students with expectations of becoming office employees should become well acquainted with computers and their operations at the high school and junior college levels. Efficient use and intelligent understanding of mechanical office equipment will be demanded of most office employees.

County Clerks

There will be greater consolidation of duties--legislation trends indicate county clerks will soon assume responsibility for all elections--National, State, Township, School, and Municipal. Computers are finding their place in even the smallest counties, making it more economical to have a central local government office rather than a number of township offices.

Insurance

"Typing skill continues to be essential for our new female employees. We feel that the high school graduates do not have sufficient training in concentrated typing; they should have another semester. We in the insurance business feel a need for typists to have more training in numeric (or statistical) typing. As far as data processing is concerned, we no longer have a need for students to be trained in unit record equipment; their emphasis should be on computers and related systems development."

Accountants

There is a continual trend toward mechanization in the office because a greater amount of information is desired and can be obtained. Well trained and efficient office employees are hard to find. Therefore, a much broader course in office machines of all types should be taught in the secondary schools and junior colleges. Office employees will be required to have a working knowledge of both simple and complex computers and computerized equipment. Data Processing Service Bureaus are growing rapidly and this type of operation will continue. Office employees will need a greater understanding of overall business in order to be successful.

Architects

Data processing is rapidly moving upward and will continue. More emphasis and training should be placed on training for the automated office in the high schools and junior colleges. Specifications will probably be written by the computer in lieu of typing as is now done. Central files will be tied to the telephone and a viewer--almost 90% of our work will be done by computers by 1978.

Special comment:

"I have pulled back from automation in the past year. I find people are more versatile and therefore more valuable per dollar expended."

Attorneys

Legal offices need secretaries who have a good command of the English language, initiative and the ability to think; consequently, there is a shortage of legal secretaries. The junior colleges should train more specialized secretaries.

"I would like to state that in my profession, I cannot stress accuracy and speed enough. I feel teachers should push more for speed in shorthand and accuracy in typing. For example, some teachers are quite a bug for neatness in shorthand; to me, what difference does it make if the teacher can read what has been written on the paper. As long as the student can read it himself and can go back later and still be able to read his notes, that is really all that counts. I feel that some teachers are stressing neatness in the wrong manner."

"I feel schools of tomorrow should offer classes to business students who prefer a specific type of employment, such as a law class for students who wish to become legal secretaries, or an insurance class for students who prefer working with insurance, etc. I believe it would be easier for a person to adjust to his job if these types of classes were offered."*

* This comment seemed worth repeating in entirety.

Medical Clinics

Most hospital accounting and billing will be done by 'on-line' data processing equipment. This will require a general upgrading of office employees to prepare them for the input operations and preliminary analysis of all output. A service bureau may be the answer because there is a real void in our school training. It is desirable for secretaries to have medical technology training in order to work in some of the specialized areas of a clinic.

Manufacturing Firms

Business will become more complex as time goes on. There will be additional automated office equipment. Additional personnel with higher levels of competency will be required to operate this equipment.

More employees will be required with typewriting and shorthand skills. Bookkeeping as such will have disappeared from larger offices. Clerical computational employees will be needed in larger numbers to service the in-put information for computers. An exposure or general knowledge of computer science will be helpful for all employees working in an operation serviced by this equipment.

In addition to requisite technical training, graduates desiring to enter the office in the clerical and/or secretarial career area will require more business acumen than they are now gaining in the secondary schools, junior colleges, and business schools.

Within the financial limitations of a school system, more money and time should be spent on preparing those students who do not plan to continue formal education but who do plan to become gainfully employed.

Projections and Developments as Indicated by Manufacturers of Office Equipment and Implications for Office Education in the Seventies

In meeting with the representatives of the manufacturers of office machines and reviewing the literature which they distribute, it becomes apparent that much new material can be included in the Business Education curriculum.

Manufacturers have developed a desk-top offset thus bringing offset duplication within the reach of the average office. This would indicate increased emphasis on all aspects of graphic communications from art composition to photography.

The telephone and copier will become important in performing the function of the business letter as more offices purchase this equipment in combination. This places more emphasis on the development of human relations capabilities, personality development, and the composing of communications than is implied in the skill of typing mailable copy.

Logic, techniques of problem solving, as well as techniques of creativity are essential to data processing. It is suggested by Dorian Shainin, in a presentation to the American Management Association's annual conference on education and training, that definite techniques for thinking creatively can be learned and practiced. The language of the optical scanner could be taught in the typewriting class, another skill suggested by advances in the data processing area.

AMS reported that as of March 1, 1967, the average weekly clerical salary for the nation has risen 4.6 percent over the previous year's weekly average. Management then can either expand sales or increase efficiency to improve its profit picture. "Today, more than ever before, the high cost of labor and the ever present personnel shortage demands use of the latest mechanical equipment to hold down expense and increase production from available personnel...eliminating human hands and handwriting, reducing duplication of records, getting the work out faster at lower unit cost..."[1], in other words, efficient office management, is proposed by business administrators to cut costs and promote company growth. The day when an applicant could enter an office and say she was qualified because she could type so many words a minute is now practically obsolete. Business needs personnel oriented in complete office practices.

Computers have developed so rapidly that schools and the computer industry were not prepared to train people to do the things that needed to be done. As more software and operating system packages are developed, it is predicted by one respondent that jobs for keypunch operators and programmers will diminish. In the meantime, most industries have predicted that the number of data processing jobs will more than double.

In interviewing manufacturers as to their opinions on implications of technological changes in the 70's, to a person they expressed the same thought: "How can we begin to predict changes in the next ten years? We have no conception of the changes possible next year."

Many speculations can be made, however. Will automatic, fully remote controlled dictating machines eliminate the need for shorthand?

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[1] Business Equipment Manufacturers Association/bema, New Techniques in Office Operations, (Elmhurst, Illinois: The Business Press, 1968), pp. 105-106.

Even should this develop, secretaries will continue to need competence in grammar, spelling, and form. Will copying machines be used exclusively to produce stencils for duplication, eliminating the typing of stencils?

Electronic calculators as well as computers have many implications for updating instruction in business arithmetic and in bookkeeping. Students will need comprehension of the mathematical concepts peculiar to computer operation. In addition to the mechanics of computing interest and depreciation, there will be reason to teach such knowledges as numeration systems other than the base-ten system and floating point arithmetic. How will the increased use of computer service companies change the role of the bookkeeper? Will the bookkeeper merely file output? Manufacturers have developed arithmetic machines which in effect are desk-top computers with the ability to store as well as compute. Electronic calculators are becoming more competitive in price. An overview of work flow and of accounting systems will be involved if the bookkeeper is to be capable of debugging his records.

There is a decided trend in industry to enter the educational field. There is a trend toward the merger of publishers with the manufacturers of business machines. This indicates that more and better teaching materials should be available.

Manufacturers report offering courses for teachers as well as software products that are geared to the student in an effort to supply the job market with enough trained people to operate the increasingly complex machinery. For example, a programmed text on programming entitled FORTRAN for IBM System/360, and a student text entitled Computing Concepts in Mathematics are available from Science Research Associates, Inc. Courses of study including texts and visual aids are offered by 3M Company. A limited offer of selling or leasing computers to secondary schools at an educational discount of 70% was made by IBM Corporation. This same company also publishes Data Processing Courses in Vocational and Secondary Schools which is a four-semester course outline including reference materials.

Developments in the area of microfilm have made available summaries of research studies. Indexes of the summarier are published four times a year, and the summaries are available to educators and educational researchers on microfiche cards at a cost of 25¢ each. Research is abstracted in every field of education; current research reports in the Business Education field are available from ERIC Clearinghouse, Center for Vocational and Technical Education, Ohio State University, Columbus, Ohio.

A research report preliminary to the NOBELS project is available now from the Department of Education, Washington State University, Pullman, Washington. It is entitled "Clusters of Tasks Associated with Performance of Major Types of Office Work." The study sampled office workers in various sizes of offices selected from 12 Standard Industrial Classifications. Particularly important to the teacher desirous of updating is the identification of tasks performed by 80% or more of the office workers sampled. Concise summaries of many research reports are contained in the article "Re-evaluation of Business Education Based on Surveys," which appeared in Business Education Forum, January, 1968.

Professional organizations offer help to the teacher who feels unprepared in certain areas. The Data Processing Management Association (DPMA), an international organization of management people and employers in the data processing field, offer through the high schools an extracurricular course in data processing entitled the Future Data Processors Course. DPMA supplies the teachers, volunteers who are in the data processing field. The school supplies the classroom and selects the students.

Office machines are becoming increasingly more specialized, complicated, and expensive, indicating that teachers will need imagination and initiative in developing programs for sharing equipment with the community. At the same time an on-going type of community survey will be required to determine what equipment is being phased out and machines that have been added as well as the machines most commonly used in the locality. In addition more teachers are gaining recent experience in business.

With the increased use of such classroom aids as the multichannel tapes and individual student carrels, the role of the teacher should tend to become that of classroom manager. The teacher should be increasingly more free to give individual instruction.

"Today, men in many parts of the world live at almost every level of cultural development, from primitive hunting-gathering groups to complex industrial civilizations. Yet this is almost certainly the last century in which such great diversity will exist. We can no longer excape the conclusion that advancing technology, increasing population, world-wide communications, dramatic increases in available energy, and the logic of economics, will force the development of a culture substantially held in common by all men."[1] Our commitment to occupational education for all suggests that teachers will be reviewing their educational psychology. They will be forced to try out new ways of approaching and interacting with students to cope with the increasingly diverse make-up of students in the classroom. One publisher offers audio tapes on such subjects as "Imaginetics: New Horizon for Creative Thinkers," "Treating the Anti-Social Child," and "Race Prejudice."

Because of the present national emphasis on education and the increased funds available, state and federal educational agencies should be publishing more and more material for the teacher. New methods of reaching and motivating the student are available; such products as Freedom to Learn by Charles Merrill and Acquisition of Typewriting Skills by Leonard J. West are only examples of the methods books available. It follows that libraries should have myriad publications of pertinent, usable information. As the scope and the responsibilities of the business education teacher grow, so grow the resources and materials for updating to meet the challenge of tomorrow.

Conclusions

Contact with manufacturers reveals substantial curriculum changes that can be made in Business Education.

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[1] Adapted from an address given by Joseph C. Wilson, Chairman and Chief Executive Officer of Xerox Corporation, Xerox, 1967 Annual Report.

The realization that computers will come to be used in every business leads to the conclusion that some degree of competency in data processing may emerge as an entry into any career a student may choose to pursue. In addition office workers will have to be more efficient in both old and new skills. Manufacturers do not venture to predict how vast future changes might be.

Teachers who want to keep abreast of the new developments in business machines will have to depend more and more upon their manufacturer's representatives, current research reports, periodicals, professional organizations, and their own business community.

The changing role of business and the teacher implies that the teacher will need to up-date continuously.

Occupational Trends and Implications for Office Education in the Seventies

The Role of the School

Along with the technological changes in the seventies will be the philosophical changes in the attitudes of the school in regard to values, course content, curricula, methods of learning, and effective use of more leisure time. More research is necessary to find out what needs to be done, and the most effective and economical ways in which to accomplish the job. All of this will require changes in the viewpoints of teachers, colleges and universities, high schools, legislatures, and the students.[1]

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[1] Michael, Donald N., "The Next Generation," Random House, New York, New York, 1965, p. 84.

At the high school and community college level some of the major changes will be in programmed instruction, the content of the courses of study, the curricula itself (i.e., the subjects to be offered), and more effective guidance and counseling.

Programmed Instruction

Programmed instruction provides flexibility in meeting the needs and abilities of the students--that is to be able to present the material the student wants to learn, at the time he is ready to learn, on an individual basis. However, new as the concepts and techniques are, programmed learning is already showing signs of hardening into fixed, mechanical technology.[1] This is partly due to inadequately prepared teachers and partly due to commercial pressure. The various tapes, texts, and other instructional materials assume that the learner has acquired the necessary information or skills when a certain lesson is completed, and do not take into consideration the processes by which the individual human learns.

Many programmed instruction courses still assume that a certain topic may be studied only at a certain age and within a certain sequence of learning. They expect a student to accomplish only so much in a certain length of time, and only that amount that a sometimes questionable test of his ability says is possible. Programmed learning is not being used effectively to test theories of learning, how people think, or to show the teacher how to improve the processes by which she teaches. In some cases programmed learning is simply a substitute for an inadequate teacher rather than a teaching aid.

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[1] _Ibid_., p. 87.

Within the next decade the well educated and the poorly educated will be readily recognizable. The most effective means of education and training will have to be immediately enacted. Programmed learning seems to be a good teaching method in deprived areas, rural areas, areas where the teachers are overworked or not sufficiently trained in the subjects they must teach, and for students who are ill or isolated for other reasons. This is why it is important for teachers to study learning techniques, theories of the cognitive processes, motivation techniques, methods of effectively using programmed instruction and other teaching devices, as well as their own special subject matter.

The Curricula

The curricula of the schools will have to keep up with mechanization and technology as it develops. Technology has opened up whole new fields of careers and closed other careers. This does not apply only to jobs in factories and on assembly lines.

For example, in 1870 more than half of the workers in the United States were farmers. Today only one worker in twelve is a farmer, and this rate is still declining. Mechanization and scientific farming methods have made farming the industry that has been most affected by the technological changes in this country.[1] Thus, while technology closed many jobs in farming, it opened many others in the manufacture of farm equipment, pesticides, fertilizers, seeds, and the necessary development and research facilities, besides the accompanying office work required to implement all these new careers and businesses.

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[1] Angel, Juvenal L., "Students' Guide to Occupational Opportunities and Their Lifetime Earnings," World Trade Academy Press, New York, New York, 1967, p. 19.

More and more skilled jobs are becoming technical jobs. A technical worker can expect to change his specialty approximately six times during his working life. This presents the demand for training and retraining. The workers must be equipped with the educational background and flexibility of skills to be able to change his specialty as needed. The schools should be prepared to offer technological and skill subjects as they are demanded by current career opportunities. The greatest need for continual upgrading of courses of study and subjects offered in the high schools and community colleges is in vocational education.

Guidance and Counseling

Vocational guidance will receive more emphasis in the seventies. This guidance is needed badly for the underprivileged youth, and unfortunately it is this group for which it will be most difficult to provide guidance. These students are in schools that are overcrowded and understaffed, and are often in economically deprived areas.

The guidance personnel should be qualified in helping the student analyze and evaluate his own work potential and should be able to give him the information and help he needs to plan for his future according to the individual's talents and interests.

Guidance is especially important for technical and mechanical occupations because it is in this area that jobs are most affected by rapidly changing technology. Counselors need detailed information about occupational opportunities two to ten years in the future. At the present time there is little such information available. Counselors should also have current statistical knowledge regarding the reasons certain people fail or succeed in an occupation. Job requirements and working conditions will be changing so rapidly that different characteristics will be needed for the job that carries the same label, but is actually a different occupation.

The duties of the guidance counselor are many and varied, from helping the mentally retarded, the physically handicapped, the gifted, understanding the problems of minority groups to obtaining psychological services for those who need them.

Hopefully, qualified guidance personnel will be so effective and learned about the needs of the students and society, and the opportunity trends in the labor market that they will have a strong influence on the planning of the school curriculum.

It is apparent that in the future guidance personnel will be aided by automated guidance systems. A vocational guidance system is being developed for Willowbrook High School in Villa Park, Illinois under a grant supported by the Research Coordinating Unit of the Illinois Board of Vocational Education and Rehabilitation. This project is scheduled for completion in 1971.

"Like some other systems, the Willowbrook system uses computer technology mainly to make individualized vocational information more readily available to students and counselors. The system's computer serves as an automated library for vocational and student cumulative-record information. Students will have on-line access to the vocational and student information and will also receive off-line reports of student interaction with the computer."[1] Doesn't this seem like a logical approach with the numerous listings at the present time and the future outlook for more to come?

Training and Retraining for Careers

There is a steady decline in the demand for unskilled labor. In order to become productive members of society many individuals who have received no training or job education need to be trained. There are also those workers who need to improve their skills and learnings, and those who have been trained for an out-moded or obsolete job and need retraining. Education can improve the lot of those with the highest exposure to unemployment and the lowest incomes.

Before the individual decides on the training he would like to pursue, it is well to study the outlook for occupational change in the near future. The four greatest industry groups in the United States are manufacturing, retail and wholesale trade, government, and service industries in that order. All of these industries include operative jobs, machinists, technicians, engineers, stenographers, bookkeepers, salesmen, and supervisors.

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[1] Computer-Based Vocational Guidance Systems, U. S. Department of Health, Education, and Welfare, Office of Education, (OE-25053), Washington, U. S. Government Printing Office, 1969, p. 158.

The industry with the greatest growth, although not one of the greatest number of workers, is that of service. People are demanding ever increasing amounts of various services. Employment in the service industries is expected to increase to 11.9 million by 1975.[1]

The construction industry is also expected to have rapid growth in the seventies. This is due to rapid growth in population and income, increased demand for private dwelling and increased government spending on construction of schools, hospitals, and highways. This industry is expected to reach 4.4 million workers by the middle seventies.[2]

One of the smaller industry groups with very rapid growth is finance, insurance, and real estate. Its' development reflects our great population growth, and the increasing business activity. It is anticipated that this industry will employ 4 million people by 1975.[3]

The industries of farming and mining are steadily decreasing the number of employees. Modern technology takes over the jobs formerly done by manpower. Competition of other sources for fuel and power have hurt the mining industry. This plus mechanization has caused the number of employees required in the mining industry to steadily decline.

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[1] Angel, Juvenal L., "Students' Guide to Occupational Opportunities and Their Lifetime Earnings," World Trade Academy Press, New York, New York, 1967, p. 23.

[2] Ibid., p. 23.

[3] Ibid., p. 23.

Armed with these facts, the worker can decide upon the type of training which would be most beneficial to him and engage in one of the many educational programs available. Many industries have on-the-job training and retraining programs available to employees. The Manpower and Training Act begun in 1962 making training programs available to all unemployed persons. About 70 percent of those completing their training in this program have been employed shortly thereafter.[1] There are also many work-study programs and occupational-experience programs available to persons who are interested. Various vocational centers are opening all over the United States and are sponsored by federal and state funds. There are many other programs such as the Job Corps, the Youth Corps, and training of prisoners.

These programs all have similar objectives--to benefit the worker and increase his standard of living through education.

The Effects of Cybernation

Automation and computers will have the most important effect on the job market in the future. Occupational forecasting, based on the previous and today's world of work, will prove to be incorrect in many ways. Cybernation has only begun to make its impact. In the next fifteen years cybernation will upset the entire labor market, from the unskilled to the professional.

Until recently it was thought that the computer would usurp jobs. Walter Buckingham, in his book The Great Employment Controversy, states, "On the average every electronic computer puts 35 people out of work and changes the kind of work for 105 additional workers." However, this prediction has not come true. Although the computer and electronic data processing equipment can perform the work instead of manpower, they also have opened up a whole new line of careers.

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[1] Angel, Juvenal L., "Students' Guide to Occupational Opportunities and Their Lifetime Earnings," World Trade Academy Press, New York, New York, 1967, p. 257.

The new electronic accounting machines have not really changed. They do the same work, and perform the same applications, but in a much more economical manner. These new machines have electronic computational capability, storage facilities and other improvements which are being utilized to do the same job it has always done, only better and faster.

They are also capable of feeding information into the computer, such as inventory control, sales, cost per unit, payroll analysis, etc. This information has become a vital part of running businesses efficiently as current, up-to-the-minute information is always available to the analysts and production managers. Information is an important resource of every business, and computers are responsible for this development.[1]

This is another case where technology has opened up a whole new field of careers. Recent figures show that since the computer can perform so many services, the demand for office workers has increased rather than decreased. There is a great demand for unit record workers, computer operators, programmers, data analysts and other cyberneticists on all levels.

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[1] Holzbach, "Changing Role of Accounting Machines in the Office," Business Press, Elmhurst, Illinois, 1968, p. 87.

The Value of an Education

The combination of education and experience are the two most important factors in obtaining a job and advancing or being promoted in that job. Of these two factors, education is by far the most important. Technology is changing many occupations so quickly; consequently, experience must be backed up by a good education. Financially speaking, a high school diploma is worth more than 20 years of working experience without it.[1]

Data based on yearly income sometimes does not reveal the value of an education--there are always some individuals with relatively little education who earn more than those with more education. However, when the lifetime earnings of the work force are considered, the dollars-and-cents value of education is very apparent. One explanation of this fact is that those without the educational background do not receive advancements as quickly, and sometimes even lose their jobs due to technological changes which simply eliminate their occupations.

A college degree is nearly always a requirement for anyone who wants to enter a profession. Physicians are the highest paid of all professional men, followed by dentists and lawyers. These professions also require the most education. Semi-skilled or unskilled jobs require the least education and receive the least pay. They also have the highest rate of turnover and seasonal unemployment.

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[1] Angel, Juvenal L., "Students' Guide to Occupational Opportunities and Their Lifetime Earnings," World Trade Academy Press, New York, New York, 1967, p. 11.

Conclusions

Education has a direct relation to the potential earnings and employability of workers. In the next ten years the occupational outlook for workers in all industries except mining and farming is excellent. Increase in population and income has increased the business operations of industry, which in turn creates a great demand for office workers in all classifications of office occupations.

Computers and electronic data processing equipment have created the ability to store and compile information vital to running businesses, and because they operate so efficiently have created new careers and job opportunities rather than causing unemployment.

"Although many new technologies will alter the job market, it is clear that barring unseen developments, automation and computers will have the most important overall consequences for the composition of the labor market."[1]

Schools should take these facts into consideration in planning their curriculum offerings. Most junior colleges and vocational training centers do offer work in data processing, but more courses should be offered at the high school level.

The well known anthropologist Margaret Mead states the challenge of the future in regard to change, "We are now at the point where we must educate people in what nobody knew yesterday, and prepare in our schools for what no one knows yet, but what some people must know tomorrow."[1]

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[1] Michael, Donald N., "The Next Generation," Random House, New York, New York, 1965, p. 119.

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[1] Angel, Juvenal L., "Students' Guide to Occupational Opportunities and Their Lifetime Earnings," World Trade Academy Press, New York, New York, 1967, p. 249.

CHAPTER V

PROJECTIONS FOR CURRICULUM DEVELOPMENT IN OFFICE EDUCATION IN THE SEVENTIES

The preceding data in this study have presented evidence that occupational skills and requirements are changing due to technological developments in office equipment and office procedures. Therefore, the office education curriculum for the seventies should be revised in order to prepare students for employment in office occupations. The preparation of the students should be geared to their ability and is dependent upon the ability of the teacher.

Some of the factors affecting the preparation of students are: teachers; methods of instruction, scheduling, and facilities; instructional material and equipment; and standards and evaluation.

Teachers

During the seventies we will be deeply concerned with teacher qualifications. The real key to the success of the office education program in a school is the teacher or teachers that are challenged with the opportunity to provide training and guidance for student participants in the schools. The teacher must be up-to-date with business, up-to-date in trying out educational innovations, up-to-date in learning theory applied in the classroom, able to evaluate learning that has occurred, up-to-date in administrative arrangements of human talent for learning purposes (teacher aides, scheduling, team teaching, learning programs, etc.), able to move from courses or segmented learning experiences to programs for people, understanding of entry behavior of boys and girls, and able to "plug in" and "plug out" according to student motivation and needs. Tyler once said, "All learning is individualized but not all instruction is individualized."

In order for the teacher to be effective he or she should be able to supplement formal instruction with personal occupational experience of recent years. It seems trite and far fetched to many teachers that they should be required to acquire occupational experience for teaching but it is the opinion of the investigator that the easiest solution to this problem is a requirement of a number of hours to be spent in a particular activity in an actual office; this would be a more effective requirement than evaluation of the amount learned or a sum total of the number of hours worked. One of the best ways to keep abreast of changes in technology and methods in an occupational area is to maintain employment in that field. Teachers many times consider themselves underpaid and overworked; perhaps summer employment would provide them with additional earnings and experience. Many teachers complain that it is not possible for them to work during the summers because they must attend school to complete a degree or upgrade their teaching techniques. This argument will not stand up under rigorous examination. Many institutions of higher learning offer courses during the summer in which teachers can work part-time and also receive college credit. It is not to say that a teacher must do this every summer but he or she should use good judgment in making this decision. There is an opportunity for earning and learning combined.

Professional organizations contribute considerably to the education and upgrading of the teacher who is willing to give up a few days of vacation, Saturdays, etc. to attend. These organizations provide conventions and professional meetings where much time and effort is devoted to pedagogical topics and to new technical developments. Displays of new equipment and supplies are often times a major feature of the professional program.

The administration of the school can help teachers become and remain desirous of keeping up to date by providing two or three worthwhile periodicals and books for the school library each year in the teacher's area of concentration.

Methods of Instruction, Scheduling, and Facilities

Improved methods of instruction, new types of instructional scheduling, and appropriate facilities will be necessary to cope with change. Enrollment in office education courses will increase tremendously; consequently, teachers will be searching for better methods of teaching and coping with enrollment. The so called "average class enrollment" has already become of age many times. Teachers will be handling in excess of one hundred students in three or more classes a day with assistance from trained aides. The more adequately prepared teachers will be able to delegate the clerical duties and responsibilities, thus preserving his or her role for that type of teaching which is more professional and productive.

Many students will be pursuing the courses at their own rate of speed through the use of specially prepared programmed instruction, multi-channel laboratories, video tapes, and on-the-job training. On-the-job training supplemented with proper classroom and school learning experiences is the most economical and effective method of providing adequate office education. For this type of instruction and classroom learning it is imperative that educational facilities be flexible and adaptable to accommodate the methodological and technological advances.

Classrooms and laboratories will be developed around occupational clusters as will the course content. Classrooms and laboratories will be constructed so that they can be rearranged and adjusted with a minimum of effort. This is presently being done in some of our more modern offices--why are the schools so far behind? Students studying in this type of environment will adjust much more readily to the office because they will be growing up in an environment of flexibility and self control. It is conceivable that there will be no classroom partitions.

More use will be made of problem-solving and decision-making situations. Students will be given an opportunity to think and exercise their judgment in the types of scheduling that are considered new to some and old to others. For instance, modular scheduling seems to meet the needs of some students while it would prove unprofitable for others. Block programs for office education are beginning to become more common. Isn't it reasonable that two or three periods of continuous class with office simulation procedures is a more productive pursuit of time on the part of both the teacher and student; thus phasing out the traditional 40 or 50 minute period--the passing bells ring and everyone plays "Upset the Fruitbasket."

The traditional field trip that takes a whole day to complete in order to observe a specific procedure will be replaced by a network hook up where everyone can be stationed in a room and observe in detail with question and answer periods during the observation and immediately following.

Teachers of office education and businessmen will work together more closely so that more adequate preparation for jobs will be provided by the school. The business teacher will know the current office trends and what is necessary for students to know so that students will be able to go directly into employment without entering a special training program unless there is special use of equipment peculiar to the occupation.

Instructional Material and Equipment

The mailboxes of teachers and administrators are jam packed with brochures and advertisements from publishers and manufacturers of instructional material and equipment; professional magazines are flanked from cover to cover with illustrations and sales gimmicks relating to instructional material and equipment. Teachers are being forced and will continue to be forced to act responsibly and use good judgment in the selection and use of teaching media.

More research and valid sources of information will become available to teachers and as previously stated they will become better educated and more capable of proceeding with the newer approaches. This is not to say that all that is new is good!

With the tremendous improvements in communication, transportation, manufacturing, and production the quality of instructional material and equipment will improve. It is apparent that the time is near when the traditional use of textbooks will become extinct.

Although much time, effort, and money have been expended on textbooks, then to find that when students enter a job they must pursue further schooling to bridge the gap between school which terminates on June 15 and the world of work that they enter on June 17. Many textbooks provide gymnastics and repetitive procedures; consequently, students are not motivated to learn and teachers are bored. True, we cannot expect a student to learn everything about work, but he should be prepared to continue learning. Using actual business forms and true business experiences will become the basis for the most productive classroom learning.

The use of more realistic instructional material and equipment is a must. What do we mean by more realistic? For example: why should teachers be reluctant to permit the use of electric typewriters by beginning typing students? why should every student be doing the same assignment? Do you know that during the seventies these teachers will learn far more than their students, if they have any students to teach. Students are beginning to become bored and unchallenged with such outmoded procedures. Many students do not enter or will withdraw from courses that hinder them from progressing. During the seventies we will experience many drastic changes in caring for individual differences.

During the next decade we will experience using an enormous amount of programmed instructional material, electronic equipment, video taped material, television, overhead projectors, the project plan of instruction, and computerized instruction in addition to the better presently used teaching media.

Great strides have been made and will continue to be made to meet the needs of individual students through the use of instructional material and new equipment so that students will be given an opportunity to progress to their potential. Do not be dismayed if all students do not achieve their goals--this has never been accomplished and many doubt that it is possible.

Standards and Evaluation

More meaningful standards and more realistic evaluation of student progress are among the major goals for the seventies. Programs will be more thoroughly and adequately evaluated by state officials, local administrators, and classroom teachers.

The objectives of the office education program will become much broader. Speed goals for shorthand and typewriting will remain a must. However, more interest will be exercised in learning about the individual student and his progress at different stages of learning. We already know that standards vary from job to job. Also, ask a businessman what his standards are and frequently he will admit that he has no stated standards. The more learned teachers of office education in the seventies will take advantage of already completed research and engage in research themselves in an attempt to identify basic job patterns and the standards inherent in these jobs in order that the level of instruction may be improved. Teachers will be able to help the students become better informed about occupational opportunities and educational requirements, functions and responsibilities of an office, duties and how they are interrelated, office standards, and the skills and knowledge necessary to perform in accordance with approved office standards.

An appropriate and realistic evaluation of objectives will encourage the raising of standards and improving the curriculum. Students will be permitted to explore the vocational aspects of education and prepare for college at the same time; these are some of the types of students that have possibilities for becoming better qualified business teachers of the future. Why should we continue to deprive a student of entry into the vocational classes because he shows promise of progressing to a four-year college and earning a baccalaureate degree? On the other hand, the office education program has a great deal to offer to the sometimes classified lower-achievers, disadvantaged, and culturally deprived. Some of the more uncommonly used types of scheduling will permit more students to explore learning.

It appears that too often we only think of shorthand and typewriting in preparation for office vocations--release that idea immediately. Many dollars, much time and effort should and will be spent on evaluating teachers, programs, students, and the progress of schools. The integration of NOBELS and a purpose-centered curriculum will make it possible for each student to be provided with an individual program in keeping with his objectives and potential.

More schools will be adding content to their courses that will provide information relative to the over all economy and business community in which the student lives and participates as a student and citizen. Unless the student acquires the concept of the economic system, he will not understand the relationship of occupations and their impact upon society. Students must learn to live in a competitive society. Therefore, it is important that they learn personal traits such as responsibility, punctuality, and honesty.

GUIDELINES FOR CURRICULUM DEVELOPMENT AND IMPLEMENTATION IN THE SEVENTIES

The Development of Curriculum Directly Related to Employment Needs

Curriculum must be based on current job standards and the initial needs of workers in specific local occupations. The teacher must learn techniques for making a job analysis; although job analyses are available, they are not specific to any certain teaching area. The teacher can instigate and encourage cooperation with other teachers in the same area in developing and expanding research into local job opportunities and standards.

Through reading, inservice courses, conducting job surveys, interviewing employers, and checking with local employment officials, the teacher receives direction for improving a particular course of study. A few well-formulated questions posed to businessmen and graduates can yield suggestions for change, however a continuing program of research must be established and it must continually be followed by appropriate curriculum revisions.

The Development of Improved Counseling

Counselors must be made aware of the objectives and the scope of business education; business education teachers must avail themselves of testing and guidance services. Cooperatively, teachers and counselors need to make available the best techniques possible in guiding the student to understand himself, his abilities, and his interests.

Cooperatively, teachers and counselors can provide remedial programs or short-term individualized programs geared to assisting the student in achieving success according to his capabilities in an area that is most suited to the individual. In addition teachers and counselors can inform students of the areas in which there are currently the greatest job opportunities.

The Development of Programs for Students with Special Needs

Potential dropouts can be directed when the teacher offers alternatives. Alternatives in the form of special courses must necessarily begin with the individual. Courses which emphasize mastery of the subject matter over a longer period of time may fit the needs of some students. Shorter courses designed for the student who has made a late occupational choice is another alternative. The adult in need of retraining and the college-bound student need to be served in their own way.

The Development of Economic Understanding

When the business education teacher has provided comprehensive background in the past and present nature of the economic system, the student is better able to relate his own job to the economic process and to place it in perspective within the business community. The student learns about what he will face in office work. When the student is led to understand the relationships between jobs he realizes the importance of fulfilling the obligations of his own job and is in a position to sense potential changes in job requirements. Motivation to become eligible for promotion is inherent in this understanding.

The Development of Personality

The ability to communicate and interact successfully with people, to accept responsibility, and to be capable of leadership are developed not by talking about these qualities but through opportunities to practice them in the classroom. Social skills must include personal integrity and also appreciation and respect for work. The student guided in these areas who becomes competent overall is immediately qualified for many positions regardless of changes in specific business skills.

The Development of Ability to Learn

The business education teacher today has a responsibility to dispel the old notion that education stops upon graduation. By providing variety in teaching procedures, and equipment that is appropriate in meeting individual differences, the teacher sets the stage; by personally continuing to learn the teacher sets an example. A knowledge of the resources for learning in the school and in the community is essential.

Practice in setting one's own goals and in making decisions for oneself can be incorporated into classroom assignments and projects. The student who has practiced independence in planning and carrying out hiw own learning is in the process of establishing this habit. He is learning where and how to learn.

The Development of Basic Competencies

Progress in learning business skills, initial employment opportunities, and occupational mobility are all greatly limited when the basic skills of reading, writing, computing, and speaking are deficient. Inabilities in these areas must concern the business education teacher. Making arrangements for individual or small-group remedial instruction is possible within the time limits imposed by a teacher's job. The need for special instruction can be identified by the business education teacher and instruction arranged for through the counselor or teachers in the area of deficiency.

The Development of Occupational Experience Programs

The opportunity to practice skill and knowledge in the real situation should be available for every student. Occupational experience may be simulated in school or developed in a cooperative program with the community. The business education teacher should instigate a feasibility study for the establishment of a cooperative program if this program is not already available. The teacher should encourage and assist in the program's development. An Advisory Committee established as part of the cooperative program ensures continual contact with the business community. The careful coordination of occupational experience with the related class in school can insure its relevancy to occupational preparation and the resulting experience becomes meaningful and motivating to the student.

The Development of Improved Student Evaluation

A student's possible success in seeking employment and in subsequent job satisfaction is greatly increased when the business education teacher provides an accurate evaluation of the student's capabilities. Accurate evaluation tends to improve good public relations when businessmen are better informed as to the objectives of the program. This may take the form of a written, positive statement, provided in addition to the regular school record. This statement could include the behavioral objectives accomplished by the student, an accurate description of definite levels of skill competency, a work experience analysis, an indication of personal qualifications, and a description of extra-curricular activities in which the student has engaged.

The Development of Improved Professional Evaluation

Evaluation of the business education program should be periodic on a professional level. It should involve teachers, administrators, teacher-educators, specialists in business and education, employers, and labor and manufacturer's representatives. A follow-up of graduates should be undertaken periodically; improvements may be suggested through contact with former students.

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APPENDIX A

EXHIBITS OF FORMS USED IN GATHERING DATA

Exhibit 1

Your school has been selected to participate in a research project that I am currently directing at the University of Illinois. I am studying the occupational skills and requirements that will be needed by office employees in the seventies in order to efficiently prepare them for employment.

All findings will be synthesized and recommendations will be made. The final report will be available to business teachers. The report may be used as a guide for office education in the secondary and post secondary schools, and as a guide in the preparation of business teachers.

The completion of the enclosed questionnaire is of great importance to the validity of the research and the accuracy of the findings depends on the response of each school. I shall be looking forward to receiving your completed questionnaire by February 10, 1969. A self-addressed stamped envelope is enclosed for your convenience. If you have any questions regarding the questionnaire, please contact me by mail or phone at the address listed below.

Sincerely yours,

Anna Mahaffey
Assistant Professor
Room 346 Education Building
University of Illinois
Urbana, Illinois 61801

Phone - 217/333-2784

AM/jp

Enclosure: Blank questionnaire
Self-addressed stamped envelope

Exhibit 2

March 5, 1969

Your firm has been selected to participate in a research project that I am currently directing at the University of Illinois. I am studying the occupational skills and requirements that will be needed by office employees in the seventies in order to efficiently prepare them for employment.

All findings will be synthesized and recommendations will be made. The final report will be available to business teachers. The report may be used as a guide for office education in the secondary and post secondary schools, and as a guide in the preparation of business teachers.

The completion of the enclosed questionnaire is of great importance to the validity of the research and the accuracy of the findings depends on the response of each firm. I shall be looking forward to receiving your completed questionnaire. A self-addressed stamped envelope is enclosed for your convenience. If you have any questions regarding the questionnaire, please contact me by mail or phone at the address listed below.

Sincerely yours,

Anna Mahaffey
Assistant Professor
Room 346 Education Building
University of Illinois
Urbana, Illinois 61801

Phone 217-333-2784

AM:kd

Enclosure: Blank questionnaire
Self-addressed stamped envelope

Exhibit 3

Name of School____

Address____

City, State, Zip______________________________________

Place a check mark ✓ in the column(s) that apply to your current curriculum and to your future curriculum.

Course	Presently offer		Plans to add by 1978		Expect to discontinue by 1978	
	Yes	No	Yes	No	Yes	No
Typewriting, 1st semester						
Typewriting, 2nd semester						
Typewriting, 3rd semester						
Typewriting, 4th semester						
Personal Typewriting						
Office Practice						
Secretarial Practice						
Bookkeeping I						
Bookkeeping II						
Business Law						
Consumer Problems						
Economics						
Business English						
Office Machines						
Economic Geography						
Business Arithmetic						

Course	Presently offer		Plan to add by 1978		Expect to discontinue by 1978	
	Yes	No	Yes	No	Yes	No
General Business						
Introduction to Data Processing						
Computer Mathematics						
Advertising						
Retailing						
Salesmanship						
Shorthand I						
Shorthand II						
Cooperative Distributive Education						
Cooperative Office Occupations						
Others (please specify)						

Which of the following business machines do you now use? Which do you expect to be using by 1978? Place a check mark ✓ in the column(s) that apply.

Machine	Presently using		Plan to acquire by 1978	
	Yes	No	Yes	No
TYPEWRITERS Manual				
Electric				
Executive IBM				
Flexowriter				
Vari-Typer				
IBM MTST				
Justowriter				
Auto-typist				
Other (please specify)				
DUPLICATING EQUIPMENT Spirit process				
Mimeograph process				
Offset process				
Copier				
OTHER Teletype				
Switchboard				
Addressing machine				
Facsimile				

Machine	Presently using		Plan to acquire by 1978	
	Yes	No	Yes	No
ADDING Ten-key electric				
Ten-key manual				
Full keyboard electric				
Full keyboard manual				
CALCULATORS Key-driven electric				
Key-driven manual				
Printing, electric				
Printing, manual				
Rotary, electric				
Rotary, manual				
BOOKKEEPING MACHINES				
MACHINE SHORTHAND				
DICTATION EQUIPMENT Magnetic belt				
Magnetic disc				
Magnetic tape				
Plastic belt				
Tape recorder				
SHORTHAND LABORATORIES Multiple-tape console with individual listening stations				
Tape recorders with listening stations				
Phonographs				

Machine	Presently using		Plan to acquire by 1978	
	Yes	No	Yes	No
Wireless, battery-powered units				
Other (please specify)				
DATA PROCESSING EQUIPMENT Key punch				
Sorter				
Collator				
Interpreter				
Verifier				
Accounting machine				
Computer				
Reproducer				
Scanner				
Keypunch simulators: IBM Selectric				
Royal Training Tandem				
Smith-Corona 250 KPT				
Electric portable card punch				
Manual portable card punch				

Give a summary of your prediction of trends and developments in the Business Education curriculum by 1978. If more space is needed, extra pages may be attached.

Give a summary of the skills and knowledges you predict your students will need for the world of work in 1978.

(Signature)

(Position or title)

Exhibit 4

Name____

Address____

City, State, Zip_________________________________

Type of business_________________________________

Number of office employees_______________________

Estimated number of office employees by 1978_____

Do you have an on-the-job training program? _____Yes _____No

The people that I employ were trained by schools.

_____Yes _____No _____Don't know

Place a check mark, _____Yes _____No, in the columns that are applicable to your business.

	Now Rent or Now Own		Plan to acquire by 1978		School training is adequate		Schools should train	
	Yes	No	Yes	No	Yes	No	Yes	No
TYPEWRITERS Manual								
Electric								
Executive IBM								
Flexowriter								
Vari-Typer								
IBM MTST								
Justowriter								
Auto-Typist								
Other (please specify)								

	Now Rent or Now Own		Plan to acquire by 1978		School training is adequate		Schools should train	
	Yes	No	Yes	No	Yes	No	Yes	No
DUPLICATING EQUIPMENT Spirit process								
Mimeograph process								
Offset process								
Copier								
OTHER Teletype								
Switchboard								
Addressing machine								
Facsimile								
ADDING MACHINES Ten-key electric								
Ten-key manual								
Full keyboard electric								
Full keyboard manual								
CALCULATORS Key-driven electric								
Key-driven manual								
Printing, electric								
Printing, manual								
Rotary, electric								
Rotary, manual								
BOOKKEEPING MACHINES								

	Now Rent or Now Own		Plan to acquire by 1978		School training is adequate		Schools should train	
	Yes	No	Yes	No	Yes	No	Yes	No
DICTATION EQUIPMENT Magnetic belt								
Magnetic disc								
Magnetic tape								
Plastic belt								
Tape recorder								
MACHINE SHORTHAND								
DATA PROCESSING EQUIPMENT Key punch								
Sorter								
Collator								
Interpreter								
Verifier								
Accounting machine								
Computer								
Reproducer								
Scanner								

Do you employ a service bureau to perform your bookkeeping functions?
_____Yes _____No

Do you employ a service bureau to perform your duplicating functions?
_____Yes _____No

Give a summary of your prediction of trends and developments in business as they may affect office employees by 1978. If more space is needed, extra pages may be added.

____

____

____

____

____

____

__________________________	__________________________
(Signature)	(Position or title)

APPENDIX B

EXHIBITS OF COURSES AND EQUIPMENT NOT INCLUDED ON SCHOOL QUESTIONNAIRE

Exhibit 1

SUMMARY OF COURSES OFFERED IN JUNIOR COLLEGES IN ADDITION TO THOSE LISTED ON THE QUESTIONNAIRE

Course	Number Presently Offering	Plan to add by 1978
Accounting I	12	
Accounting II	12	
Accounting III	8	
Accounting IV	8	
Accounting, Advanced	1	
Accounting, Cost	7	
Accounting, Office	1	
Accounting, Secretarial		1
Accounting, Tax	5	
Business Communications	1	
Business Correspondence	1	
Business Law I	1	
Business Law II	1	
Business Machines I	2	
Business Machines II	2	
Business Mathematics	2	1
Business Statistics	2	
Card Punch	1	
Data Processing	1	
Human Relations		1

Course	Number Presently Offering	Plan to add by 1978
Insurance	1	
Introduction to Business	10	
Management, Cooperative Internship	2	
Management, Office	1	
Management, Personnel	2	1
Management, Principles of	4	1
Management, Records	1	
Management, Sales	1	
Marketing, Cooperative	2	
Marketing I, Principles of	6	
Marketing II, Principles of	6	
Marketing Research	1	
Mid-management	2	
Money and Banking	1	
Office Procedures	3	
Personality Development	1	
Personal Finance	2	
Real Estate	1	
Report Writing	2	
Secretarial Practice	2	
Secretarial Practice, Legal	1	1
Secretarial Practice, Medical	1	
Secretarial Science	1	
Seminar	1	

Course	Number Presently Offering	Plan to add by 1978
Shorthand III	3	
Shorthand IV	3	
Shorthand, Intermediate	1	
Shorthand, Touch	1	
Social Science	2	
Typing, Speed	1	
Typing, Statistical	1	

Exhibit 2

SUMMARY OF OFFICE MACHINES USED FOR TEACHING PURPOSES IN THE JUNIOR COLLEGES IN ADDITION TO THOSE LISTED ON THE QUESTIONNAIRE

Machine	Presently using	Plan to acquire by 1978
Calculators		
Electronic	2	1
Electronic, printing	1	
Electronic computer	1	
Gestefax	1	

APPENDIX C

EXHIBITS OF HIGH SCHOOLS, JUNIOR COLLEGES, BANKS, DEPARTMENT STORES, CITY CLERKS, COUNTY CLERKS, INSURANCE COMPANIES, ARCHITECTS, ACCOUNTANTS, LAW FIRMS, MEDICAL CLINICS, MANUFACTURING FIRMS, AND MANUFACTURERS OF OFFICE EQUIPMENT PARTICIPATING IN THE STUDY

Exhibit 1

HIGH SCHOOLS PARTICIPATING IN STUDY

Alton Senior High School
2200 College Avenue
Alton, Illinois 62005

Aurora East High School
799 Fifth Avenue
Aurora, Illinois 69505

Beardstown Senior High School
200-15 Street
Beardstown, Illinois 62618

Benton High School
609 East Main Street
Benton, Illinois 62812

Bloomington Senior High School
1202 East Locust Street
Bloomington, Illinois 61701

Clinton High School
115 West Johnson Street
Clinton, Illinois 61727

Danville High School
Jackson and Fairchild Streets
Danville, Illinois 61832

Flora High School
600 South Locust Street
Flora, Illinois 62812

Thornton High School
151 Street and Broadway
Harvey, Illinois 60426

Jersey High School
723 North State Street
Jerseyville, Illinois 62052

Westview High School
1200 North Jeffery Street
Kankakee, Illinois 60901

W.I.U. High School
900 West Adams Street
Macomb, Illinois 61455

Mattoon Senior High School
2521 Walnut Avenue
Mattoon, Illinois 61938

Moline Senior High School
3600-23 Avenue
Moline, Illinois 61265

Murphysboro High School
2125 Spruce Street
Murphysboro, Illinois 62966

Illinois State University
High School
University Street
Normal, Illinois 61761

Reavis High School
77 Street and Austin Avenue
Oak Lawn, Illinois 60459

Maine East High School
Dempster Street and Potter Road
Park Ridge, Illinois 60008

Central High School
1615 North North Street
Peoria, Illinois 61604

Rochelle High School
1070 North Seventh Street
Rochelle, Illinois 61068

Guilford Senior High School
6120 Spring Creek Road
Rockford, Illinois 61111

Springfield High School
101 South Lewis Street
Springfield, Illinois 62704

Wheaton Central High School
603 South Main Street
Wheaton, Illinois 60187

Exhibit 2

JUNIOR COLLEGES PARTICIPATING IN STUDY

Belleville Area College
2555 West Boulevard
Belleville, Illinois

Spoon River Community College
102 East Elm Street
Canton, Illinois

Kaskaskia College
Centralia, Illinois

Parkland College
Two West Main Street
Champaign, Illinois

Prairie State College
10th Street and Dixie Highway
Chicago Heights, Illinois

Morton College
2423 South Austin Boulevard
Cicero, Illinois

McHenry County College
P. O. Box 415
Crystal Lake, Illinois

Danville Junior College
2000 East Main
Danville, Illinois

Sauk Valley College
Dixon, Illinois

Illinois Central College
East Peoria, Illinois

Elgin Community College
373 East Chicago Street
Elgin, Illinois

Highland Community College
511 West Stephenson
Freeport, Illinois

Southeastern Illinois College
333 West College
Harrisburg, Illinois

Thornton Community College
150th and Broadway
Harvey, Illinois

John A. Logan College
111 East Cherry
Herrin, Illinois

Joliet Junior College
Joliet, Illinois

Kankakee Community College
R. R. #1, River Road
Kankakee, Illinois

Kishwaukee College
Malta, Illinois

Lake Land College
1921 Richmond Avenue
Mattoon, Illinois

Black Hawk College
1001 16th Street
Moline, Illinois

Wabash Valley College
2200 College Drive
Mt. Carmel, Illinois

Rend Lake College
315 South So. 7th
Mt. Vernon, Illinois

Moraine Valley Community College
4740 West 95 Street
Oak Lawn, Illinois

Illinois Valley Community College
Oglesby, Illinois

Olney Central College
Olney, Illinois

Triton College
2000 Fifth Avenue
River Grove, Illinois

Rock Valley College
3301 North Mulford Road
Rockford, Illinois

Exhibit 3

BANKS PARTICIPATING IN STUDY

Valley National Bank of Aurora
900 North Lake Street
Aurora, Illinois

First State Bank of Beardstown
122 South State Street
Beardstown, Illinois

Bank of Benton
Benton, Illinois

DeWitt County National Bank
Clinton, Illinois

American State Bank
211 North Main Street
Bloomington, Illinois

Bradley State and Savings Bank
205 West Broadway
Bradley, Illinois

First National Bank
17 East Main Street
Danville, Illinois

Illinois State Bank of East Alton
P. O. Box 100
East Alton, Illinois

First National Bank
P. O. Box 119
Flora, Illinois

First National Bank
Freeport, Illinois

First National Bank in Harvey
174 East 154th Street
Harvey, Illinois

Jersey State Bank
100 North State Street
Jerseyville, Illinois

City National Bank of Kankakee
189 East Court Street
Kankakee, Illinois

First National Bank of Macomb
804 West Jackson Street
Macomb, Illinois

Central National Bank of Mattoon
Mattoon, Illinois

First National Bank of Normal
210 Broadway
Normal, Illinois

Citizens Bank and Trust Co.
One Northwest Highway
Park Ridge, Illinois

Jefferson Trust and Savings
Bank of Peoria
123 S. W. Jefferson Avenue
Peoria, Illinois

The National Bank of Rochelle
510 Lincoln Highway
Rochelle, Illinois

Town & Country Bank
2301 South MacArthur
Springfield, Illinois

Exhibit 4

DEPARTMENT STORES PARTICIPATING IN STUDY

P. N. Hirsch & Co.
1832 East Broadway
Alton, Illinois

Gaylord National Corporation
1280 North Lake Street
Aurora, Illinois

J. C. Penney Co.
1630 East Empire
Bloomington, Illinois

Sears Roebuck & Co.
1631 East Empire
Bloomington, Illinois

Sears Roebuck & Co.
128 North Vermilion Street
Danville, Illinois

J. C. Penney Co.
124 West North Avenue
Flora, Illinois

J. C. Penney Co.
Freeport Lincoln Mall
Freeport, Illinois

F. W. Woolworth Co.
152nd and Dixie Highway
Harvey, Illinois

Bertman's Department Store
101 North State Street
Jerseyville, Illinois

Montgomery Ward & Co.
Schuyler at Oak
Kankakee, Illinois

Montgomery Ward
1268 R2
Macomb, Illinois

Myers Brothers Inc.
1705 Broadway
Mattoon, Illinois

W. T. Grant Co.
1613 5th Avenue
Moline, Illinois

Montgomery Ward & Co.
999 Elmhurst Road
Mt. Prospect, Illinois

J. C. Penney Co.
Walnut Street
Murphysboro, Illinois

Carson Pirie Scott & Co.
124 S. W. Adams Street
Peoria, Illinois

Carps Department Store
403-405 Lincoln Highway
Rochelle, Illinois

Myers Brothers
5th and Washington
Springfield, Illinois

Sears Roebuck and Co.
201 North Center Street
Clinton, Illinois

Estenfelder's
107 West Front Street
Wheaton, Illinois

Exhibit 5

CITY CLERKS PARTICIPATING IN STUDY

City of Alton
101 East 3rd Street
Alton, Illinois 62002

City of Aurora
44 East Downer Place
Aurora, Illinois 60502

City of Beardstown
101 West 3rd Street
Beardstown, Illinois 62618

City of Benton
201 West Main
Benton, Illinois 62812

City of Bloomington
401 South East Street
Bloomington, Illinois 61701

Village of Bradley
147 South Michigan Avenue
Bradley, Illinois 60915

City of Clinton
118 West Washington
Clinton, Illinois 61727

City of Danville
402 Hazel
Danville, Illinois 61832

City of Freeport
Mrs. Luera McHugh
City Clerk's Office, City Hall
Freeport, Illinois 61032

City of Jerseyville
Mrs. Marie Walkington, City Clerk
201 South Jefferson Street
Jerseyville, Illinois 62052

City of Kankakee
Frank J. Kranklis
209 North Indiana Avenue
Kankakee, Illinois 60901

City of Macomb
Box 228
Macomb, Illinois 61455

City of Mattoon
City Clerk's Office, City Hall
Mattoon, Illinois 61938

City of Moline
619 16th Street
Moline, Illinois 61265

City of Murphysboro
City Clerk's Office, City Hall
Murphysboro, Illinois 62966

Village of Oak Lawn
5252 West James Street
Oak Lawn, Illinois 60453

City of Park Ridge
505 Park Place
Park Ridge, Illinois 60068

City of Peoria
419 Fulton Street
Peoria, Illinois 61604

City of Rochelle
522 4th Avenue
Rochelle, Illinois 61068

City of Rockford
425 East State Street
Rockford, Illinois 61104

City of Springfield
Office of the City Clerk
Room 106 Municipal Building
Springfield, Illinois 62701

City of Wheaton
303 West Wesley
Wheaton, Illinois 60817

Exhibit 6

COUNTY CLERKS PARTICIPATING IN STUDY

Marie Hiller
Benton, Illinois

Paul D. Morris
Room 102 Court House
Bloomington, Illinois

James E. Ely
Court House
Clinton, Illinois

Gerald R. Block
7 North Vermilion Street
Danville, Illinois

Linda J. Crotchett
Court House
Jerseyville, Illinois

Edmund A. Soucie
Court House
Kankakee, Illinois

Exhibit 7

INSURANCE COMPANIES PARTICIPATING IN STUDY

Millers Mutual Insurance Assn. of Illinois
320 Easton Street
Alton, Illinois 62002

State Farm Insurance Companies
2309 East Oakland Avenue
Bloomington, Illinois 61701

Exhibit 8

ARCHITECTS PARTICIPATING IN STUDY

William L. Flippo
215 Market Street
Alton, Illinois

Oscar Kleb
77 South Broadway
Aurora, Illinois

Lundeen, Hilfinger & Asbury
Fourth Floor Meara Building
Bloomington, Illinois

C. S. Norcross & Sons Co.
P. O. Box 178
Bushnell, Illinois

Willard C. Hart, Campus Architect
Communications Building
Southern Illinois University
Carbondale, Illinois

John C. King
212 West Fairchild Street
Danville, Illinois

Ernest O. Moore
4 East Clinton
Joliet, Illinois

Lee E. Gatewood
921 South 19th
Mattoon, Illinois

Keith E. Middleton
1 Citizens Square Professional Building
Normal, Illinois

Harold Miller
10108 Parke
Oak Lawn, Illinois

Bradley & Bradley, Inc.
924 North Main Street
Rockford, Illinois

Rochester, Goodall, Moldoven
& Spain Engineers, Inc.
Box 371
Salem, Illinois

Hadley and Worthington, Architects
1225 South Sixth Street
Springfield, Illinois

Glenn G. Frazier & Associates
104 West University
Urbana, Illinois

Mr. Hamilton B. Dox
Architects and Engineers
First National Bank Building
Peoria, Illinois

Childs and Smith
Rochelle, Illinois

Exhibit 9

ACCOUNTANTS PARTICIPATING IN STUDY

R. C. Scheffel & Company
307 Henry
Alton, Illinois

Melvin E. Kerr
111 West Downer Place
Aurora, Illinois

Allsup, Vollbracht, Coffman & Striegel
705 Peoples Bank Building
Bloomington, Illinois

Vernon D. Corzine, Accountants
471 West Broadway
Bradley, Illinois

Frank M. Masiokas
212 West Fairchild Street
Danville, Illinois

John Kinney Associates
1015 Thacker Street
Des Plaines, Illinois

Wilfong Accounting Service
Room 5, Stanford Building
Flora, Illinois

Robert L. Carlile
27 West Main Street
Freeport, Illinois

Swift Office Services, Inc.
16615 South Halsted Street
Harvey, Illinois

Main Lafrentz & Co.
121 North McArthur Street
Macomb, Illinois

Jones, Greathouse & Venatta
Box 672
Mattoon, Illinois

Haskins & Sells
John Deere Road
Moline, Illinois

Donald N. Disteldorf & Co.
9500 South 50th Court
Oak Lawn, Illinois

Fuller and Scott
501 6th Avenue
Rochelle, Illinois

Albert Triebel, Jr.
303 North Main, Room 818
Rockford, Illinois

Turnbull and Schussele
P. O. Box 99
Springfield, Illinois

C. A. Marchildon
114 South Emma
West Frankfort, Illinois

Exhibit 10

LAW FIRMS PARTICIPATING IN STUDY

Berry, Leighty and Simshauser
Masonic Building
Macomb, Illinois 61455

Robert Borhans
625 1st National Bank
Peoria, Illinois 61602

Theodore V. Bradley
1014 A Walnut Street
Murphysboro, Illinois 62966

Carlon and Carlon
4 Citizens' Square
Normal, Illinois 61761

Chisholm and Krnetta
7909 South Parkside
Oak Lawn, Illinois 60459

Edwards, Brunnemeyer and Hughes
47 West Galena Boulevard
Aurora, Illinois 60504

Fearer and Nye
Box 117
Rochelle, Illinois 61068

Wm. F. Fuiten
908 Ridgely Building
Springfield, Illinois 62701

John F. Gibbons
127 West Pearl
Jerseyville, Illinois 62052

Glenn & Logue
Box 146
Mattoon, Illinois 61938

Graham, Califf, Harper, Benson & Railsback
Sixth Floor, Moline National Bank Bldg.
Moline, Illinois 61265

Hart and Hart
602 Public Square
Benton, Illinois 62812

Herrick, Rudasill & Moss
118 Warner Court
Clinton, Illinois 61727

Fredrick E. Huber
409 Arcade Building
Kankakee, Illinois 60901

Laudeman & Laudeman
200 Griesheim Building
Bloomington, Illinois 61701

Pedderson, Menzimer, Conde & Stoner
812 Salcott Building
Rockford, Illinois 61101

M. H Smith
234 West St. Louis Avenue
East Alton, Illinois 62005

Smith, McCollum & Riggle
First National Bank Building
Flora, Illinois 62839

Vermillion County Legal Aid Society
14 East North Street
Danville, Illinois 61832

Exhibit 11

MEDICAL CLINICS PARTICIPATING IN STUDY

Dreyer Medical Clinic
1870 West Galena Boulevard
Aurora, Illinois

The Beardstown Clinic
507 Washington Street
Beardstown, Illinois

Franklin Hospital
201 Bailey Lane
Benton, Illinois

K. I. Kline, D. C.
956 West Broadway
Bradley, Illinois

Carbondale Clinic
Route 13 West
Carbondale, Illinois

Danville Polyclinic
101-103 West North Street
Danville, Illinois

The Flora Clinic
433 East 7th Street
Flora, Illinois

Freeport Clinic
222 West Exchange Street
Freeport, Illinois

Community Medical Center
15900 Carol Avenue
Harvey, Illinois

Mental Health Center of Kankakee County
1953 East Court Street
Kankakee, Illinois

McDonough District Hospital
525 East Grant Street
Macomb, Illinois

Link Clinic
213 South 17th Street
Mattoon, Illinois

The Neurology Clinic
1504 Seventh Street
Moline, Illinois

Brokaw Hospital
Franklin Avenue
Normal, Illinois

E. E. Weinfield, DDS
9839 Southwest Highway
Oak Lawn, Illinois

Park Ridge Medical Associates
101 South Washington
Park Ridge, Illinois

Medical & Surgical Clinic
100 N. E. Randolph Avenue
P. O. Box 1606
Peoria, Illinois

Rochelle Community Hospital
923 North Third Street
Rochelle, Illinois

Springfield Clinic
1025 South 7th Street
Springfield, Illinois

Exhibit 12

MANUFACTURING FIRMS PARTICIPATING IN THE STUDY

Mr. Larry James
Olin Matheison Chemical Corp.
General Office
East Alton, Illinois 62024

Mr. Robert Hickernell
Illinois Glove Company
217 East Main
Beardstown, Illinois 62618

Mr. R. T. Trello
Office Manager
Simplex Time Recorder Co.
449 North Walnut
Springfield, Illinois 62701

Mr. E. R. Fowler
Square D
205 South Northwest Highway
Park Ridge, Illinois 60068

Mr. J. A. Countryman
Division Manager
Del Monte Corporation
Rochelle, Illinois 61068

Mr. Craig Phillips
Personnel Manager
Barber Green Company
400 North Highland
Aurora, Illinois 60507

Mr. Woody Lorentz
Personnel Manager
Phillips-Dodge
P. O. Box 531, Route 3
Murphysboro, Illinois 62966

Mr. Richard Hannah
Personnel Manager
Micro-Switch
Chicago & Spring Street
Freeport, Illinois 61032

Mr. Robert Thompson
Coilcraft, Incorporated
105 East Water
Farmer City, Illinois 61842

Mr. Olin Decker
Bliss and Laughlin Steel Company
281 East 155th
Harvey, Illinois 60426

Mrs. Freda White
Boughman Manufacturing Company
Route 16 East
Jerseyville, Illinois 62052

Mr. Jack Jones, Superintendent
International Shoe Company
Flora, Illinois 62839

Mr. Dennis J. Johnson
Affco Plant
Modine Manufacturing Co.
915 East Washington
Bloomington, Illinois 61701

Mr. Robert Salmon
Personnel Manager
Container Corporation
400 East North Avenue
Carrol Stream, Illinois 60187

Mr. M. Harris, Manager
General Employment
Sundstrand Corporation
2531 11th Street
Rockford, Illinois 61101

Mrs. James Strett
Plant Manager
Bower Roller Bearing
711 North Bower Avenue
Macomb, Illinois 61455

Mr. S. C. Weitzlufft, Manager
Employer & Community Relations
General Electric
1430 East Fairfield
Danville, Illinois 61832

Mr. Al Carpenter
Employment Interviewing Supervisor
Caterpillar Tractor Company
Administration Building
100 N. E. Adams
Peoria, Illinois 61601

Mr. R. C. Ehrman
Manager of Relations
General Electric Company
Towanda Avenue, Route 66
Bloomington, Illinois 61701

Mr. William Noel
Long Airdox Company
P. O. Box 479
Benton, Illinois 62812

Mr. R. C. Wengel
Armour-Baldwin Laboratories
Route 54 North
Kankakee, Illinois 60901

Exhibit 13

MANUFACTURERS OF OFFICE EQUIPMENT AND SUPPLIES INCLUDED IN THE STUDY

A. B. Dick Company
5700 West Touhy Avenue
Chicago, Illinois 60648

Addressograph Multigraph Corp.
1200 Babbitt Road
Cleveland, Ohio 44117

Adler Typewriter - ABM, Inc.
2737 North Milwaukee Avenue
Chicago, Illinois 60647

American Automatic Typewriter
Company
2323 North Pulaski Road
Chicago, Illinois 60639

American Permac, Inc.
One Commercial Avenue
Garden City, New York 11533

American Photocopy Equipment Co.
2100 Dempster Street
Evanston, Illinois 60204

American Telephone and Telegraph
Company
195 Broadway
New York, New York 10007

Automatic Office Division
Information Control Systems, Inc.
109 East Madison
Ann Arbor, Michigan 48104

Avery Label Company
747 North Larch Street
Elmhurst, Illinois

Bell & Howell Micro Data Division
(Ditto Div.)
6800 North McCormick Road
Lincolnwood, Illinois 60645

California Computer Products, Inc.
305 North Muller
Anaheim, California 92803

Commodore Business Machines, Inc.
31 East 32nd Street
New York, New York 10016

Communitype Corporation
11700 South Western Avenue
Chicago, Illinois 60643

Concord Electronics Corporation
1935 Armacost Avenue
Los Angeles, California 90025

Control Data Corporation
8100 34th Avenue South
Minneapolis, Minnesota 55440

Decitron Communication Systems,
Inc.
567 East 105th Street
Brooklyn, New York 11236

DeJur-Amsco Corporation
Northern Boulevard at 45th Street
Long Island City, New York 11101

Dennison Manufacturing Co.
Framingham, Massachusetts 01701

Dictaphone
120 Old Post Road
Rye, New York 10580

Digital Equipment Corporation
Maynard, Massachusetts

DURA
Division Intercontinental
Systesm, Inc.
Palo Alto, California 94306

Eastman Kodak Company
343 State Street
Rochester, New York 14650

Electronic Systems for Education, Inc.
799 Roosevelt Road
Glen Ellyn, Illinois 60137

EPSCO, Inc.
411 Providence Highway
Westwood, Massachusetts 02090

ETC Gray Manufacturing Company
Tecumseh, Michigan

Executone, Inc.
47 Austell Place
Long Island City, New York 11101

Facit-Odhner, Inc.
501 Windsor Drive
Secaucus, New Jersey 07094

Farrington Manufacturing Company
850 Third Avenue
New York, New York 10022

Ford Industries, Inc.
5001 S. E. Johnson Creek Boulevard
Portland, Oregon 97206

GAF Corporation
140 West 51 Street
New York, New York 10020

General Binding Corporation
1101 Skokie Boulevard
Northbrook, Illinois 60062

Gestetner Corporation
216 Lake Avenue
Yonkers, New York 10703

GMA Computer Corporation
320 Yonkers Avenue
Yonkers, New York 10701

Grundig Business Machines, Inc.
355 Lexington Avenue
New York, New York 10017

International Business Machines Corporation
Armonk, New York 10504

Image Systems, Inc.
Houston Fearless Corporation
30 East 40th Street
New York, New York 10016

ITEK Business Products
ITEK Corporation
Rochester, New York 14603

Iwatsu Electric Co., Ltd.
2-710 Kugayama, Suginami-ku
Tokyo, Japan

Karl Heitz, Inc.
979 Third Avenue
New York, New York 10022

3-M Company
St. Paul, Minnesota 55101

Mohawk Data Sciences Corporation
P. O. Box 630
Palisade Street
Herkimer, New York 13350

National Blank Book Co., Inc.
Holyoke, Massachusetts 01040

National Cash Register Company (The)
Dayton, Ohio 45409

Norelco Office Products
100 East 42nd Street
New York, New York 10017

NUARC
4100 West Grand Avenue
Chicago, Illinois 60651

Nyematic Dictation Systems
2003-15th Avenue West
Seattle, Washington 98119

Olivetti Underwood Corporation
One Park Avenue
New York, New York 10016

Optical Scanning Corporation
Newtown, Pennsylvania

Pac-Well Paper Industries, Inc.
3839 North 35th Avenue
Phoenix, Arizona 85017

Pitney-Bowes, Inc.
Walnut and Pacific Streets
Stamford, Connecticut 06904

Safeguard Business Systems Corp.
192 Spangler Avenue
Chicago, Illinois 60126

SCM Corporation
299 Park Avenue
New York, New York 10017

Scriptomatic, Inc.
2030 Upland Way
Philadelphia, Pennsylvania 19131

Sharp Electronics Corporation
178 Commerce Road
Carlstadt, New Jersey 07072

Speed-O-Print Business Machines Corp.
1801 West Larchmont Avenue
Chicago, Illinois 60613

Stenocord
3755 Beverly Boulevard
Los Angeles, California 90004

Tab Products Co.
633 Battery Street
San Francisco, California 94111

Tokyo Shibaura Electric Co., Ltd.
Tokyo, Japan
(Toshiba America, Inc.
477 Madison Avenue
New York, New York 10022)

Universal Office Equipment Co.
1231 West Washington Boulevard
Chicago, Illinois 60607

Varityper - AM Corporation
Mt. Pleasant Avenue
Hanover, New Jersey 07936

Viatron Computer Systems Corp.
105 Terrace Hall Avenue
Burlington, Massachusetts 01803

Victor Comptometer Corporation
3900 North Rockwell Street
Chicago, Illinois 60618

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Division of Barry Wright
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Copiague
Long Island, New York 11726

Xerox Corporation
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